THE JOURNAL OF GAS LIGHTING
WATER SUPPLY & SANITARY IMPROVEMENT

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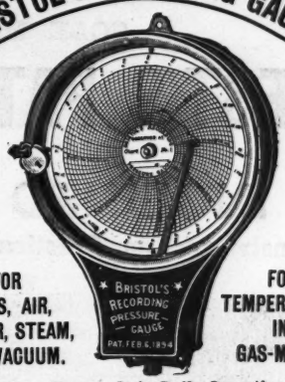

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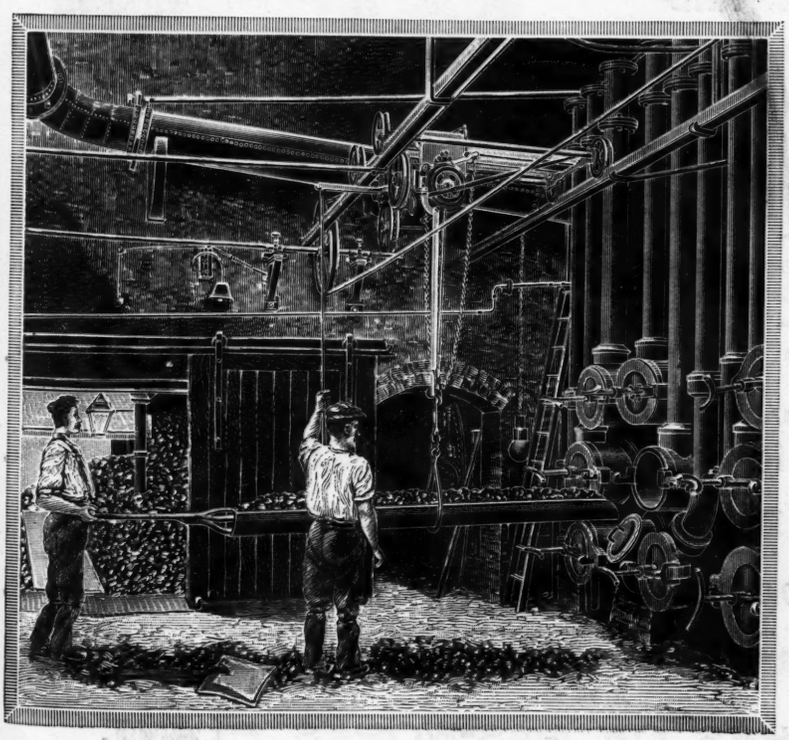

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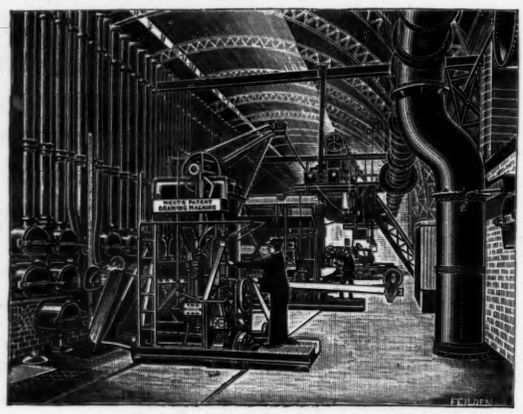

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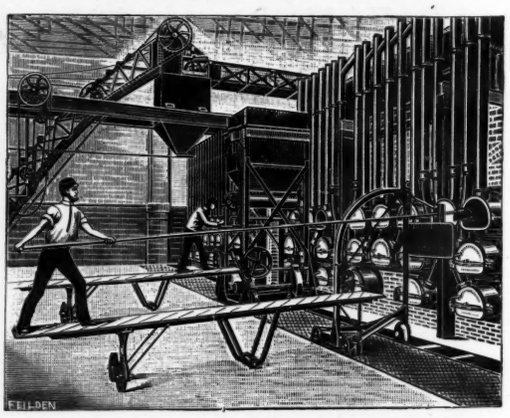

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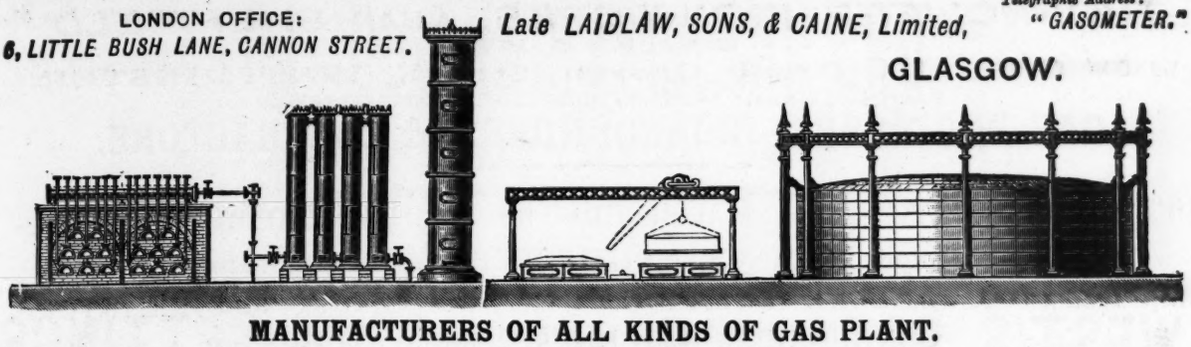

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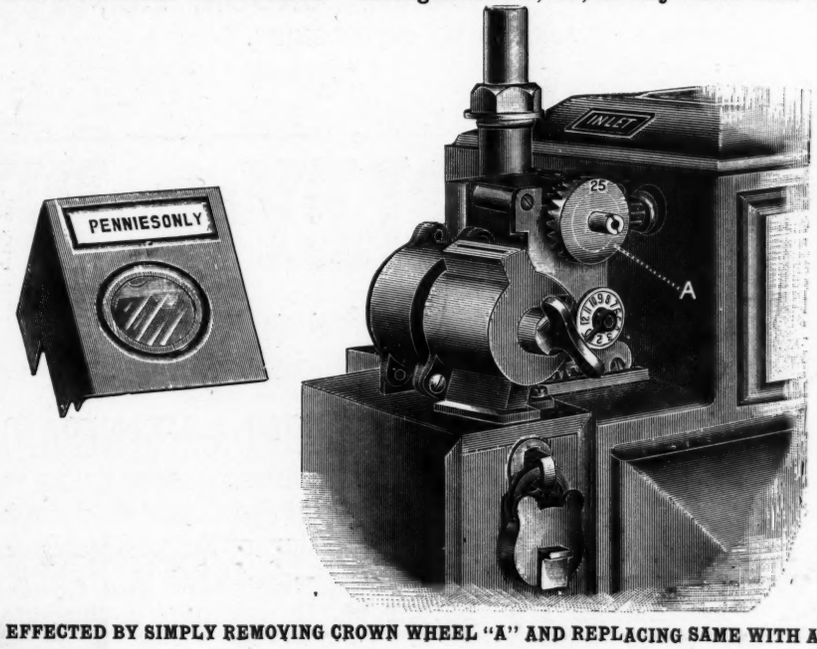

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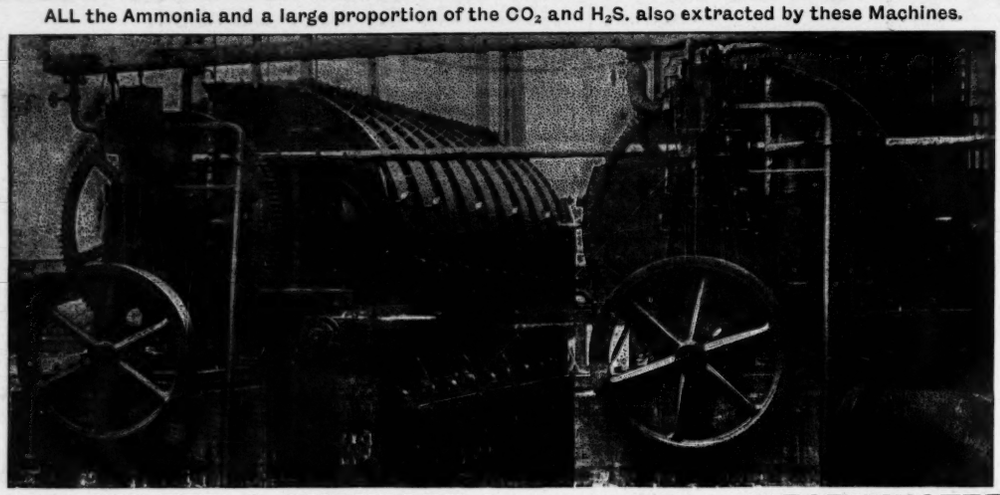

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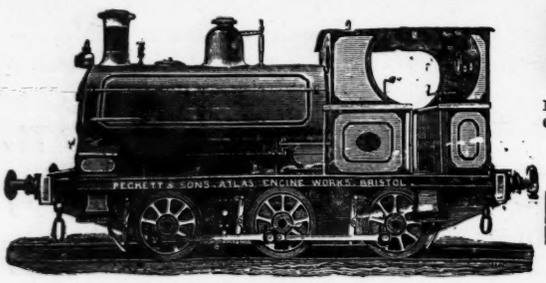

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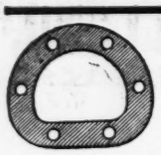

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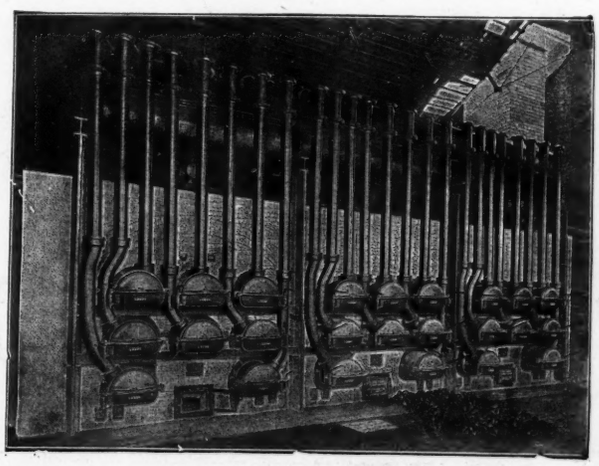

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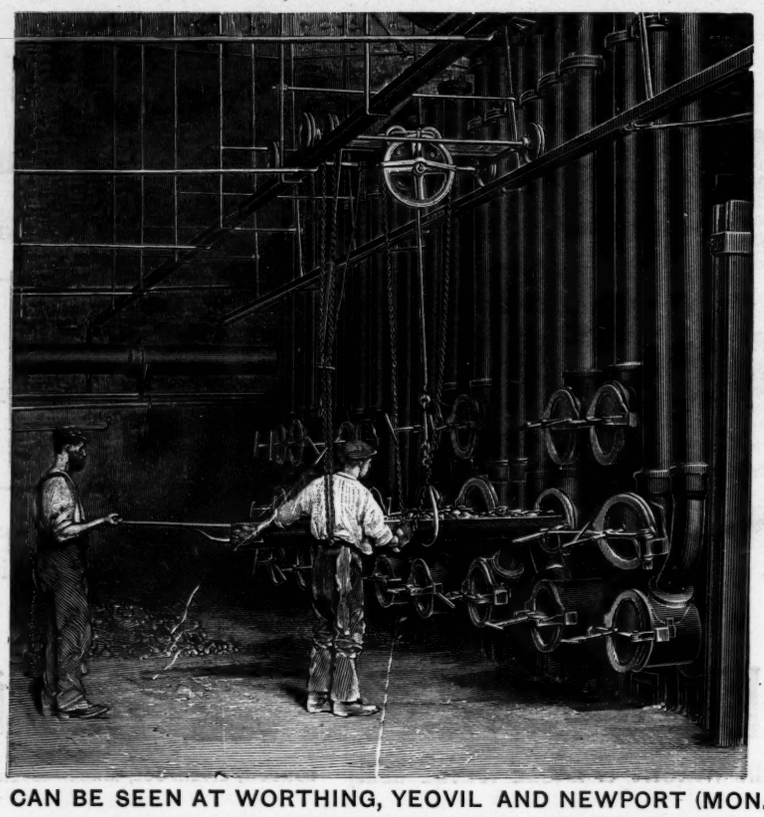

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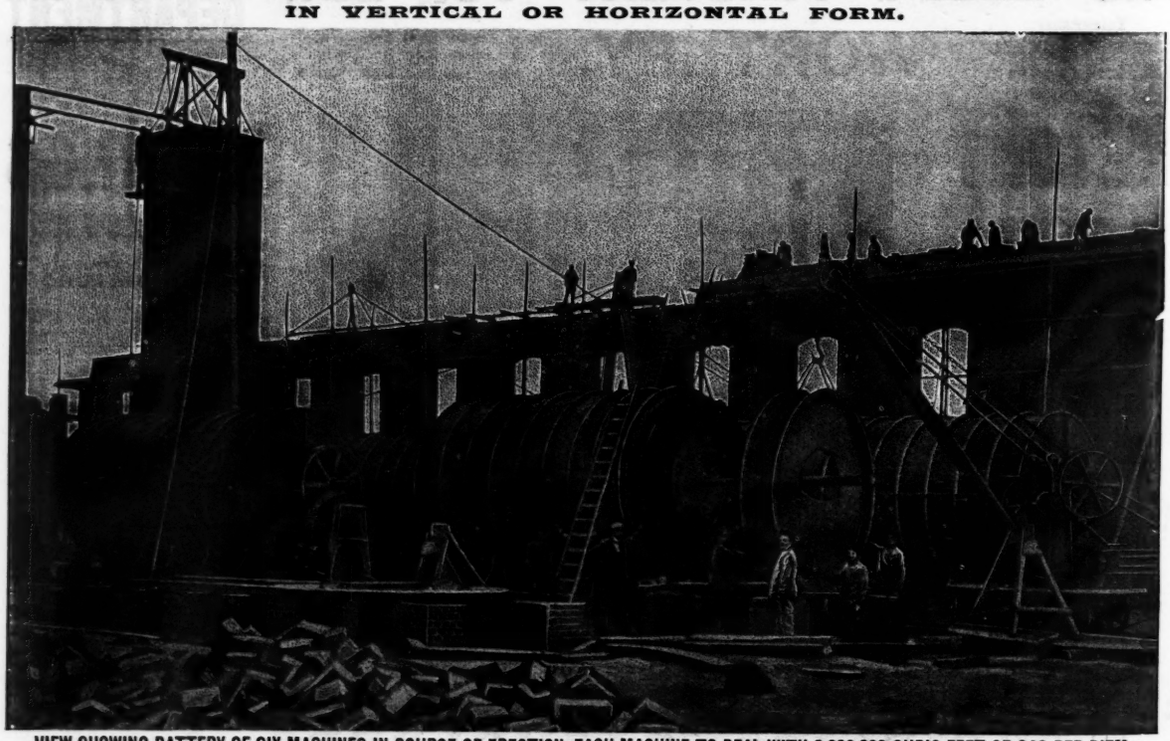

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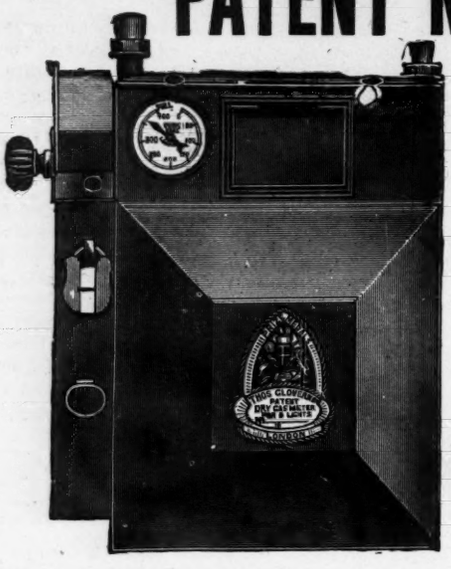

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JOURNAL OF GAS LIGHTING, WATER SUPPLY, &c.

VOL. LXXVIII., No. 1996.——TUESDAY, AUGUST 13, 1901.

EDITORIAL NOTES.

The Offer of Profit-Sharing to the Commercial Company's Workmen.

THE will of the leaders of the Gas Workers' Union is stronger than the reason of the Commercial Gas Company's workmen. The proposal of the Directors of the Company (mentioned in the "JOURNAL" for the 6th inst.), that the benefits of profit-sharing should be extended to their employees, is not being accepted with that unanimity that one would expect from an intelligent body of men. A large number of the latter have taken counsel with the Union officials on the subject, although really the matter is purely a domestic one as between the Company and their workpeople. But it is quite palpable that the Union see in all such schemes as this, which serve to tighten the bonds of good feeling and interest between employers and employed, something which will put their power into subjection; and so they prefer—notwithstanding the clearly expressed statement of the Board "that the men are perfectly free to "belong to their Unions or not as they think fit"—that the schemes which have reduced their domination to almost *nil* on the south side of the Thames, shall not be allowed to cross the river, and take root among the army of men on the northern side whom they are able at the present time to sway.

Therefore, the leaders of the Union have, on the last two Sundays, convened joint meetings of the gas stokers, yardmen, and others working at the Poplar, Wapping, and Stepney stations of the Commercial Company to consider the profit-sharing scheme "put forward," as they state, "by Mr. H. E. Jones and Mr. G. Livesey." Receiving information of the second meeting, which was held at the Radical Club in the (on Sunday mornings) offensive locality known as Durham Row, Stepney, a representative of the "JOURNAL" attended for the purpose of taking notes; but was not permitted to remain. It must, however, be acknowledged that the question as to whether or not he should be allowed to be present was put to the meeting in very fair and courteous terms by the Chairman, and every respect was accorded him. The reasons for not requiring publicity are, of course, obvious. But the action merely points to one of two things. Either that the workmen present mistrust those in daily authority over them, or that they desired an opportunity for secretly railing against those whom they look upon as the originators of the scheme. However, we need not labour that point, and more particularly as we have another act of courtesy for which to thank the officials of the Union. Conformably with a promise made at the meeting, the resolution passed on this occasion as well as on the preceding one has been forwarded to us for publication. It reads—

> Resolved that, after hearing the various statements of the workmen working at the Poplar, Stepney, and Wapping stations of the Commercial Gas Company, also statements by workmen working at the South Metropolitan Gas Company, we hereby pledge ourselves not to sign the profit-sharing scheme put forward by the Company.

In every branch of industrial life, and in every organization, there will be found men who will speak ill of their best friends; and in that class we have no hesitation in placing those men who are covered by the clause of the resolution "also statements by workmen working at the South Metro-"politan Gas Company." We have equal confidence in saying that Mr. Livesey and the bulk of his men on the south side of the river will—while perhaps feeling grieved that there are "black sheep" in the flock—quickly let that pass as the one looks on the contentment of his men and the thousands of pounds they have invested in the Company, and the men themselves open the records which tell them how much they have to their credit in the concern, how much better off they are now than in olden times, and how much is the provision they have made, and are still adding to, for ensuring to themselves some amount of comfort if they are spared to live to an honourable old age.

Though the resolution has been passed at the two meetings called by the Gas Workers' Union, we have no authority for stating that the decision will govern the action of all the men employed by the Commercial Company. At any rate, it cannot be said that Sunday morning's meeting was representative of the three stations of the Company. From an independent source, we learn that there were not more than thirty men present; and this confirms the impression of our representative. For the workmen's own sakes, we hope that the views of these few do not reflect those of the general body. However, the scheme states "that every man is free "to accept the offer or decline it as he pleases;" and a book is to be open at each station for a fortnight from the date of the formal issue of the project, for the entry of the names of those who wish to accept the scheme. The document received by the men is dated July 31; so that by Thursday the Directors should know how many, if any, have decided to accept the benefits of a scheme "which has proved so "advantageous to the employees of several other companies."

The House of Lords and the Law of Labour.

DURING the present session the House of Lords have decided two cases of the first importance to employers of labour, members of Trade Unions, and His Majesty's subjects generally. These are the Taff Vale Company's appeal, which resulted in establishing the responsibility of Trade Unions for the wrongful acts and defaults of their officers; and the Belfast case of *Quinn v. Leathem*, which turned on the boycotting and intimidation of an employer at the hands of a number of conspiring Trade Unionists. These notable decisions will spoil the game of militant Trade Unions for good; because an injunction against the Union itself, as well as against individual members, will issue on cause being shown. Hitherto, and for far too long a period, Trade Unions have regarded themselves, and have been regarded, as exempt from actions at law on account of acts perpetrated by officials in their name, and sustained out of their funds. A notorious example in point was the experience of a London firm of plate-glass grinders, who were put to an expense of about £2000 to meet a strike ordered and managed by a Trade Union official earning about £2 a week. Legally, they obtained redress; but judgment was only issued against the man personally, which, of course, was no remedy. This has now been changed; and henceforward the Union itself can be made a party to an action for damages wrongfully inflicted by its officials. Care will have to be taken, however, in civil proceedings of this kind to make it clear that wrong was intended, and was actually done, to the amount specified in the statement of claim; and also that the active agents of the Union were responsible officials. Mere strikers, who beset premises and assault or intimidate individuals, lay themselves open to criminal procedure. It was more than hinted by Lord Lindley, however, that a civil action would lie for cumulative interference with, and consequent damage to, trade, where the separate acts would not be of sufficient magnitude to warrant either civil or criminal law proceedings.

Great difficulty was manifestly felt by the Law Lords in reconciling their judgment in the Belfast case with that in *Allen v. Flood*. They ultimately succeeded in effecting this, but only at some sacrifice of the reputation of the law of the land for logical consistency, and of the majority of the Law Lords who gave the judgment in question for lucidity. It seems that the outside world has greatly overrated the importance of the judgment in *Allen v. Flood*. We must be very careful, according to the Lord Chancellor, how we venture to use their Lordships' decisions in particular cases as precedents, or even as statements of recognized legal principles. The House of Lords have been wrestling with various particular applications of the question whether the element of motive can be considered in adjudicating upon legal actions, since the celebrated Mogul Steamship Company's case, disposed of in 1892. In this case, which was one of unequal trading—certain persons receiving more favourable treatment than others—the House of Lords laid it down that this is not actionable. Traders can do as they please with their goods, within very wide limits. If a shopkeeper elects to give away a certain line of wares, with the

intention of driving a rival out of business, the sufferer has no legal remedy. Consequently, if a group of merchants agree to do in union what each of them could do singly, there is no illegal conspiracy. Then came *Allen v. Flood*, in which conspiracy and procuring breach of contract, among other things, was alleged. The issue here was confused by the English lawyer's habit of talking in the technical sense about "malice." No layman ever talked long with a lawyer on a matter in which the element of malice figured, without being told, with an air of infinite superiority, that the legal sense of the word malice is altogether different from the common one. The distinction seems to have led the Courts and the House of Lords into something perilously near a self-contradiction. What would happen if the House of Lords should contradict themselves, cannot be asked without a shudder.

For the time being, this dreadful calamity has been averted by the daring of the Lord Chancellor and Lord Justice Lindley, in reviewing *Allen v. Flood*, and explaining precisely what this famous judgment really did decide. This was nothing more nor less than that, if an act is not in itself illegal and actionable, nothing that can be asserted with respect to the motive of the perpetrator will make it so. As Lord Lindley says, this principle of law has been on the point of breaking out from several decisions of recent years; but it was never so plainly disclosed as it was in *Allen v. Flood*. By taking a most favourable view of his conduct, the Judge who tried this case was able to decide that the defendant here had done nothing actually illegal—that there was no evidence of conspiracy, intimidation, coercion, or breach of contract. What he did was to inform the employer that the members of the Boilermakers' Society in his service determined to go out, if he continued to employ two men not belonging to the Society. They belonged to another Trade Union; but this had nothing to do with it. The employment being from hour to hour, by the custom of the trade, there was no wrong in stopping the men at the close of the day, which was done. Query, Was there a proper cause of action in this? The Judge said, No. The Lord Chancellor thinks differently. Rumour has it that their present Lordships wished to get rid of *Allen v. Flood* altogether; but instead of this they have explained it away. The net result of the whole batch of decisions is slightly dubious. It appears fairly clear that any conspiracy to injure a man's business will be reached by the law. That is a distinct gain. As the Trade Unions get experience, even the rougher ones will learn that the savage policy of the brickbat does not answer. The policeman, or failing him the soldier, will be competent to protect people who wish to exercise their lawful liberty irrespective of the dictates of strike organizers. This crude appeal to physical violence will be succeeded by a more insidious concert of measures, any one of which may be insignificant, but in their entirety may be crushing.

Although this editorial has already run to considerable length, one particular aspect of the whole question, which plainly weighs upon the mind of the Lord Chancellor, must be briefly discussed. It is that the law has not yet uttered its last word upon the core of the whole trouble—which is, whether there is any continuing property in a contract of service terminable in the ordinary way at a moment's notice, or in a business custom which consists in a succession of sales and deliveries, each one completed by the appropriate payment. If there is, then any man (or number of men) who interferes with either servant or customer with malicious intent, and not to protect any right of his own, is amenable to the law. This is the unsettled question. No lawyer could pronounce definitely upon the point, having in mind *Allen v. Flood*, which still stands for what it may be worth.

Report and Accounts of the South Metropolitan Company.

THE report of the Directors of the South Metropolitan Gas Company was published in the last issue of the "JOURNAL;" and in another column will be found the statement of accounts relating to the working of the undertaking for the past half year. The first matter noticed in the report is the price of coal, and the alteration in the charge for gas already effected in consequence of the improved condition of the coal market. A curious observation is made as to the connection between the price of gas and the rate of growth of the Company's business. The expansion of the new trade in automatic meters continues at an increasing rate, which is probably more to the advantage of the wage-earning class of the population than of the Company, although, of course, he benefit is mutual. Anyone who travels nowadays by the elevated lines of the South London railways can notice, about meal times, the small number of domestic chimneys that smoke, as compared with the state of things observable some years ago. The report records the successful parliamentary action of the Board in the matter of increased capital powers and obtaining sanction for the direct issue of new stock to consumers. It regrets that equal success did not attend the attempts of the Board to obtain the protection they needed for their mains and pipes, from the electrolytic action of tramway traction currents, but promises a renewal of this effort. The reduction in the illuminating power of the Company's gas is then discussed. So far, though the Board have taken the full step from 16 to 14 candles, paying the penalty, the actual reduction of tested illuminating power has only averaged 1 candle. The Directors take the opportunity of assuring the consumers that they will not notice any difference in their light when the full statutory reduction is effected. The profit made for the half year, after meeting all the fixed charges, enables the Directors to recommend the payment of the full dividend of 5 per cent. per annum, increasing the insurance fund by £14,671, and carrying forward £21,568.

The accounts do not call for much detailed comment. The various statements relating to capital are now in the form required by Parliament, showing exactly how much nominal capital has been added by the process of conversion. The substantial sum of £80,543 has gone in extensions. The gas-rental, at 2s. 8d. per 1000 cubic feet, amounted to £734,618, as compared with £589,887 at the lower prices ruling last year. The numbers of meters and stoves at rent have increased considerably, as noticed in the report. Coke has returned more, but not commensurately with the higher cost of coal. Other residuals show a falling off. On the other side of the account, the cost of coal rose from £439,360 to £503,369. There has been a great increase under the heading of repairs and maintenance. Distribution also cost considerably more. Rates show a positive decrease. Altogether, the total expenditure has risen from £755,121 to £861,346; and the balance of profit stands at £220,314. The stock of coal, bought at the high price, has been worked down to 55,695 tons. The Directors have had to take up a temporary loan amounting to £105,000. The balance due to the Company for gas-fittings has risen to £41,142.

The Coal and Iron Trades.

THE quickened condition of the Northern coal market of late is not a matter of serious concern to those gas managers (and they are in a large majority) whose requirements for the ensuing year are now provided for at fairly reasonable prices, as that state of activity is not likely to endure for any great length of time, nor become much more marked. It has arisen from more than one cause—an active export trade, due to an eagerness on the part of contractors to get their deliveries made within the period of exemption allowed by the Chancellor of the Exchequer in respect of pre-Budget contracts, a recovery in the iron trade from the extreme depression into which it had fallen, and a tendency to slackness in output.

As to the export trade, it may be noted that the total shipments of coal for the past month have exceeded those in the same period of 1900, even after allowing for the fact that there were 27 working days in July this year and only 26 twelve months ago—the figures being 5,418,860 tons, against 4,960,118 tons. This increase is, however, entirely due to heavier shipments of "bunkers," which, it may be added, are exempt from duty. Whether or not any unfair advantage is being taken of this exemption, we cannot say; but the following figures strike one as curious. The aggregate tonnage of vessels cleared with coal cargoes to various countries from British ports during the month of July in this and the two preceding years are given as: 1899, 3·79 millions; 1900, 3·65 millions; 1901, 3·96 millions. The quantities of coal "shipped for the use of steamers "engaged in foreign trade" in the same periods are, however, returned as: 1899, 1·03 millions; 1900, 0·98 millions; 1901, 1·31 millions. So that the proportion of bunker coal to total tonnage of shipping has risen from 28 per cent. in 1899 and 27 per cent. in 1900 to 33 per cent. this year. For the seven months ended July, the tonnage cleared is slightly less this year than last; but shipments of bunker coal show an increase of nearly a million tons, or 15 per cent. The total quantity of coal sold and delivered to foreign countries during the seven months shows a falling off of nearly a million tons; so that the actual shipments of coal

from our ports during the year are almost exactly the same as in the first seven months of 1900—viz., 32,813,606 tons, compared with 32,805,809 tons.

We do not, however, in the least anticipate that this equal rate of shipment will be maintained throughout the year. The desire to secure exemption from duty will, of course, tend to keep exports at a pretty high level for some time; but the condition of trade on the Continent precludes the possibility of so much coal being required there this year as last, although we are far from believing with Mr. Consul-General Gurney that the British coal trade in the Mediterranean is in danger of annihilation by our American competitors. A curious commentary upon the statement of a coal exporter, published under a "scare" heading in a contemporary, that "we are losing our Mediterranean trade" is afforded by the export returns for July. The shipments in that month to Italy, Spain and Portugal, and Egypt show increases, respectively, of 137,469 tons, 84,169 tons, and 44,892 tons—or, together, more than twice the increase in the aggregate. That is to say, we are gaining trade there, while losing it elsewhere—in France and Holland especially.

As to the partial recovery in the iron trade, that was clearly to be expected—or, indeed, that trade would have been in a very sad way. Consumers have been for so long withholding orders while waiting for prices to come down, that, upon quotations reaching such a figure that manufacturers, in face of the current wages rates and fuel cost, preferred closing works to accepting lower prices, there was a good volume of business ready to be placed on the market. These arrears of orders will, however, be in time cleared off; and as prices are not yet low enough to entice consumers into committing themselves to enterprises of any considerable magnitude, while the export trade continues extremely dull, we do not look upon the present semi-revival of business as anything more than a fleeting one. There will have to be a widespread reduction effected in the cost of production, especially in regard to wages and fuel—which again involves the wages question—before a really marked revival of trade can take place.

That there is any tendency towards keeping down the output of coal on the part of the miners, cannot, we think, be doubted; for the men are being asked, or expect soon to be asked, to agree to reductions in wages, and they hope to stave off the evil day by lessening the production of coal. Such a policy is, however, foredoomed to failure; and the wages question will have to be faced before long in those districts where automatic arrangements are not in force. The Federation districts, outside Wales, promise the most trouble. Inside Wales, difficulty has arisen as to whether or not the shilling tax should be deemed part of the "selling price" for the purposes of the sliding-scale. The men demand, and the owners oppose, its inclusion; but there seems to be no reason at present to fear any stoppage of work in consequence. Altogether, the situation contains elements of anxiety, but none of alarm.

Flood and Fire in London.

THAT the heavy rainfall which broke up the long drought in the southern counties should have been instrumental in causing the death of several members of one family, quietly staying indoors in London at the time, by fire, is surely one of the most remarkable chains of circumstance on record. It is another example of the utter disregard of probability which the facts of experience occasionally display, to the discouragement of writers of dramatic stories. The most "original" of storytellers would never presume to get rid of a whole batch of characters in such a manner. But Fate has no scruples. Given the existence of the requisite possibilities, the potentialities of which may long lie dormant—never suspected by man—and it is only necessary to start the train. All the rest follows naturally enough; and anybody can see, by looking backward, how the whole thing came about. So the American saying is justified—"Hind-sight is ever so much clearer than foresight." The most disconcerting reflection upon this matter is that, whereas much of the most studied and expensively arranged protection from the risk of casualties attributable to the action of unregulated natural forces which engineers are expected to provide for the protection of the public is never wanted, ever and again some unsuspected, intrinsically trifling, or telescopically remote cause of danger suddenly flashes into dreadful fact. The case in point is at once both extraordinary and simple.

In Hackney Wick—a region of the East of London given over to the chemical industry, and inhabited by a working-class population—there are works in which large quantities of petroleum spirit are used, and consequently stored. The storage is in the form of underground tanks, the character of which is not described in the newspaper report of the inquest. Inasmuch, however, as Mr. Alfred Spencer, Chief of the Public Control Department of the London County Council, said he found on the works about 25 underground tanks, "which had all been sealed down by puddling "clay," it may be suspected that these tanks were not of the best possible kind for the purpose. The point is a highly important one, because Mr. Spencer spoke of petroleum spirit having found its way somehow into the local sewers, and declared that, short of removing all such works as that under notice from London, he saw no remedy for such a state of affairs. This conclusion, we take the liberty of remarking, is nonsense. Many engineering firms, who will read these lines, would willingly undertake to make and fix in position, for any manufacturer in London or elsewhere, perfectly safe and tight storage of petroleum of any grade. These vessels would not require sealing down with puddle. That sounds very primitive; but, of course, we desire to guard ourselves from appearing to imply that the practice shows culpable negligence on the part of those who followed it. It is easy to understand how a business of this kind grows, although it might be imagined that consideration of the risk of fire would impel the owners of premises on which naphtha is stored in quantity to take competent advice on the subject.

On Saturday, the 27th ult., after three days' rain, these works were flooded, and so was the whole of the adjacent district of small houses. The sewers were full, and could not carry off the water fast enough. There seems to have been a smell of naphtha in the atmosphere; and some of the newspaper reports mentioned it as a fact that warning had been given to the inhabitants against having fire in their houses or striking matches. However this may have been, a light was struck by somebody, and probably the burning match was thrown into what appeared to be water. At any rate, there was a sudden flare in a particular lane bounding the works, and the cottages on one side of it were set alight. Wonderful to relate, in one of these houses a whole family lost their lives, while nobody else in the street was seriously injured; and the fire was quickly subdued. The Jury returned a verdict of "Accidental death," as was proper; but they then added a declaration of their opinion that underground tanks are unsuitable for the storage of petroleum. This is a *non sequitur* from the evidence. If the stored naphtha had been in tanks exposed to the air, and had ignited from a flash of lightning, the same Jury would probably have given it as their solemn opinion that petroleum ought not to be stored above ground.

There is a good deal of benzol and petroleum spirit kept in gas-works, not all in desert places; and, as a rule, it is kept underground, in air and water tight receptacles. It is difficult to say where else it could be kept, in most instances. The whole question, however, of the storage of petroleum is deserving of particular examination, in the light of the fresh experience which is accumulating day by day.

WATER AFFAIRS.

Water Supply for "Domestic" Purposes.

REPORTS in succeeding issues of the "JOURNAL" of two cases raising the question of what constitutes a "domestic" supply of water, is an occurrence so unusual as to call for special notice, more particularly in view of the decisions given. The first case (reported last week) was in connection with the amount to be paid for water used in a boarding-house at Yarmouth; and the question at issue was whether a supply furnished to such an establishment was to be regarded as for a "domestic" or a "trade" purpose. If the former, the occupier would pay according to his rental; if the latter, he would be charged a special rate. The complainant contended for the former interpretation; and the Yarmouth Water-Works Company for the latter. There was no animosity between the parties; for the Company had arranged to continue the service, without prejudice, pending the settlement of the dispute. It was urged, on behalf of the Company, that where a business is carried on in a house, the water used for it must be disconnected

from the domestic supply; that carrying on a boarding-house is a business, just as is conducting an hotel; and that only a portion of the water is used for domestic purposes, the rest being practically sold to complainant's customers—thus constituting a user for profit. On the other hand, it was submitted that, though a business may be carried on in a boarding-house, the water is only used for ordinary domestic purposes; and that the proper criterion for settling the charge should be the use to which the water is put, not the premises whereon it is used. A boarding-house, it was submitted, does not differ from an ordinary lodging-house. The Magistrates, however, saw a difference, and dismissed the summons, but offered to give facilities for obtaining the opinion of a Superior Court.

The second case will be found reported in another column. There the question raised turned on the supply of water for a swimming-bath at the North-Eastern County School at Barnard Castle. The matter came before Mr. Justice Buckley; and the point submitted to him was very similar to that raised in the Yarmouth case. Here was an establishment in which is carried on the business of receiving, feeding, teaching, and housing a number of boys. For properly conducting this business—in other words, keeping the boys clean and healthy—a swimming-bath, capable of holding 35,000 gallons of water, had been constructed by the Governors of the school; and the Barnard Castle Urban District Council (the suppliers of the water) contended that this bath did not properly come within the category of "domestic purposes," to be paid for on the net annual value of the premises. Counsel for the plaintiffs conceded the point that a private individual might construct a swimming-bath for his own use without rendering himself liable for any other than the domestic rate. At the same time, he submitted that there was a vast difference between this proceeding and the construction (as in the case under consideration) of such a bath in connection with carrying on the business of a school. His Lordship thought, if such a proposition were admitted, the water used by the boys for washing their hands, cooking their meals, and every other purpose, would not be a domestic but a trade supply; and he regarded this as an extravagant construction. He said the words "trade, manufacture, or business," in section 12 of the Water-Works Clauses Act, 1863, must be read in contrast with the words "domestic purposes;" and even assuming there was a business here, the supply was nevertheless for those purposes. Quoting Lord Coleridge in the Liskeard Union case—in which it was held that "where a number of persons of "different families are collected from different places, but "under one head and one roof," they are, "for all practical "purposes, one family"—Mr. Justice Buckley considered this was the way in which the present case must be treated. All the boys, he said, constituted one establishment—one family; and the supply of water to the swimming-bath was as much a domestic supply as the water used by the masters. He therefore decided against the plaintiffs, with costs.

Both cases are of importance to suppliers of water; and the decisions are interesting, more especially when they are considered together. It is to be regretted that the term "domestic use," as applied to water, has not been so clearly defined as to leave no room for contention over its meaning. Before the passing of the Act of 1863, the washing of a carriage was regarded by Lord Campbell as a domestic use of water, within the terms of a Special Act which incorporated the General Act of 1847; but the later enactment has set this right. Lord Coleridge, in the well-known Liskeard Union case, considered that a workhouse came within the category of a domestic supply; and Mr. Justice Buckley has now included a school having a large swimming-bath. On the other hand, water supplied to a boarding-house, where the occupants are, in the words of Lord Coleridge, "persons of different families collected from "different places under one roof, and, for all practical purposes, "one family," is, according to the Yarmouth Magistrates, furnished for use in a "business," and therefore should be charged for at a special rate. In view of the two decisions, to which attention has been called, there seems to be room for a much clearer definition of the terms which have evoked them than that which is to be found in existing enactments relating to water supply.

Portsmouth Water-Works Purchase Question.

In the last number of the "Journal" we recorded the decision of the Portsmouth Corporation, by a majority of eleven (23 votes to 12), to purchase the undertaking of the Water Company. If this decision should obtain the sanction of the ratepayers, who have still to be consulted, steps will be taken to have the control of the water supply transferred to the Corporation. The present position is not the result of any *laches* on the part of the Company; on the contrary, their relations with the Municipal Authority and the consumers have lately been entirely satisfactory, owing to a voluntary reduction being made in the rentals. Nor is it due to the Corporation having been smitten with the municipalization mania which has been prevalent in recent years; for so long ago as 1855, the late Mr. R. W. Ford (for some forty years Secretary of the Company) brought forward a proposition that the then existing works should be acquired by the town. If his suggestion had been seriously entertained, the entire concern could have been bought for £42,000—a comparatively small sum; but, owing to lack of enterprise, the opportunity was allowed to slip, and, under Mr. Ford's initiative, the present Company was formed, with a capital of £80,000. The proposal has been thrice revived since then; but not until now has it been favourably entertained. The proposal has been described as the Corporation's "last chance;" and they have determined to avail themselves of it by provisionally agreeing to give the Company £1,250,000, in 3 per cent. bonds, for their property, the total capital sunk in which is now some £375,000 in shares and £125,837 on loan, while there is a reserve fund of £16,500.

Though the proposal was favourably regarded by the majority of the Town Council, the opposing minority are receiving very decided support from a local newspaper, in which the scheme has been severely criticized. Moreover, it has been closely examined, from a financial standpoint, by a gentleman who conceals his identity under the title of "An Expert Water Engineer." He has shown that the acquisition of the works on the Company's valuation will entail a rate-in-aid of nearly £15,000; while even those who favour purchase contemplate a loss during the early years of municipal management, which will take a similar period to put right. In fact, it is asserted that it will be fourteen years from now before the income balances the expenditure. Of course, the prospect would not be very alarming if Portsmouth were a borough whose rateable value was steadily increasing; but this does not seem to be the case. Furthermore, the contemplated deficit is based on the supposition that eighty years will be granted for the liquidation of the debt. We question if there is justification for any such supposition. The "Expert Water Engineer" points out that the proper terms are sixty years for gravitation schemes, and fifty years for pumping works, and urges that these should have been taken in deciding what the buyers could afford to pay. Reviewing the whole position, we confess to being unable to see that either the ratepayers or the water consumers will gain very much by the change of ownership of the water-works, beyond the satisfaction, such as it is, of knowing that they are under municipal control.

ESSAYS AND REVIEWS.

AN IMPORTANT DECISION AGAINST TRADE UNIONISTS.

Another "heavy blow and great discouragement" has fallen upon the cause of militant Trade Unionism, in the House of Lords judgment in *Quinn v. Leathem*, delivered on Monday, the 5th inst. This decision is a most valuable companion to that in the Taff Vale case; and together these pronouncements of what the law really is will put Trade Unions in a very different position in the commonwealth from that which they have hitherto presumed to occupy. *Quinn v. Leathem* was an Irish suit; and, unlike the Taff Vale case, it passed through all the stages to the House of Lords with uniformly the same result of every trial. Consequently, the ultimate Court of Appeal has simply confirmed the findings of the Courts below. At the same time, the opportunity was taken for explaining the judgment in *Allen v. Flood*, and declaring the manner in which the Lords decisions in particular cases are to be understood.

The facts were as follows: Henry Leathem is a butcher of Lisburn, and Quinn and others were officials and members of the Belfast Journeymen Butchers and Assistants' Association—a Trade Union society registered under the Trade Union Acts, 1871 and 1876. Leathem's was not a "society" slaughter-house; but for a year or two after the registration of the society, in 1893, there does not appear to have been any unpleasantness among the

butchers of Belfast and its vicinity and the powers of the new organization. In the fulness of time, however—which happened here to be a couple of years—the members of the Society among themselves adopted an unregistered rule not to work with non-union men, nor cut up meat that came from a non-society shop. This was quite the usual thing; and the ordinary consequences followed. It is only doing common justice to Irishmen to admit that when they have a weapon of offence placed in their hands, they can never rest satisfied for long without making use of it. A heavy Saxon might see a blunderbuss hanging on his wall all his life long, and not experience the smallest temptation to take it down and shoot somebody with it. Not so the Irishman. He could not keep his hands off the thing. Thus it is that when Irishmen get the upper hand in a Trade Union, there is certain to be "ructions" sooner or later, and sooner rather than later. The Belfast Butchers' Union, of course, lost no time in "feeling for heads;" and they came across Mr. Leathem. He, from the first, wanted to fraternize with the Society, and offered to join it—himself and all his house. He attended a meeting of the members, held in Lisburn, and offered to pay on behalf of his men any fines, fees, or demands, so that they should be members, and entitled to all the privileges of membership. This was altogether too tame a proceeding for the old members—members, apparently, of a month or two's seniority. They would not have Mr. Leathem's men at any price, but decided that these outcasts should be made to walk the streets in idleness for twelve months. Mr. Leathem thereupon told the Society that he would not put out his men at their bidding. This was the signal for war, literally, to the knife. The Society went to a large customer of Mr. Leathem, in Belfast, to whom he had been in the habit of sending £20 to £30 worth of meat a week, and told this tradesman (a Mr. Munce) that if he persisted in receiving meat from Leathem the Society men would refuse to cut it up. Accordingly, Mr. Munce discontinued his custom. The Society then proceeded to "black list" Leathem, by issuing posters denouncing him and his customers by name. The Union also induced Leathem's men to leave his service. Altogether, it is pleasant to notice, there were no half measures about the doings of this particularly enterprising Union.

But the long arm of the law was outstretched at last, and laid hold of these active officials at the Belfast Assizes, in July, 1896. Four separate causes of action were alleged against Quinn and his associates, and each alleged that the acts complained of were done "wrongfully and maliciously, and with intent to injure the plaintiff, and to have caused him actual loss, injury, and damage." Conspiracy was also charged in a separate count. Damages and an injunction were claimed. At the trial, the Judge left several questions as to the facts to the Jury, who answered them all in the affirmative, and assessed the damages at £200. The defendants appealed; and the arguments were heard by the Law Lords on the 11th and 12th of June last. There was no denying the facts; Counsel for the appellants confining themselves to points of law, and finally endeavouring to get protection under the famous judgment in *Allen v. Flood*. Mr. Vesey Knox submitted that the effect of this decision as bearing upon his case was that there was no actionable wrong in the appellant and others inducing people to cease dealing with Leathem, nor was there anything wrong in the members of a Trade Union combining in saying that they would only work with Union men. He also contended that, in view of the same judgment, inducing them legally to terminate their contract of service is not a wrong and actionable act, even if it has the effect of injuring a man's trade. This argument impressed their Lordships; the Lord Chancellor going the length of saying that without the element of conspiracy in the present case there was little to distinguish it from *Allen v. Flood*. At the close of the argument, judgment was reserved.

In delivering his judgment, that the appeal ought to be dismissed with costs, the Lord Chancellor said that the plaintiff by a properly-framed statement of claim, had complained of the defendants, and proved, to the satisfaction of a jury, that they had wrongfully and maliciously induced customers and servants to cease to deal with him; that the defendants did this in pursuance of a conspiracy formed among them; that in furtherance of the same conspiracy they induced his servants to quit their employment; that all this was done with malice, in order to injure the plaintiff; and that, as a matter of fact, it did injure him. If, then, upon these facts so found, the plaintiff could have no remedy against those who had thus injured him, it could hardly be said that our jurisprudence is that of a civilized community. Nobody would have doubted that such facts would establish a cause of action before the promulgation of the decision in *Allen v. Flood*. Whether or not the Lord Chancellor in his heart esteems very highly the collective wisdom of the majority of Judges who gave that celebrated decision, was not allowed to transpire in set words; but that his Lordship really regards it as an unfortunate statement of the law, in respect of its being open to misconstruction, is apparent from the care with which he explained generally how judgments of the House of Lords are to be interpreted, and defined the meaning of the one in question. He laid it down that such decisions are only of particular, not of general, validity. They must not even be quoted for authority in a proposition that seems to logically flow from them. He denied flatly that the law is logical. This being so, it is easy to see what it was that was really decided in *Allen v. Flood*, and how the Belfast action differed from it. In the former case, it was found that what was done was not actionable in itself, while there was no evidence of conspiracy. Rightly or wrongly, that was the belief held by the majority of the Judges.

In the present case, there was both wrong committed and harm done, and conspiracy. Of this there could be no question. Lords Macnaghten, Shand, Brampton, and Robertson concurred with the Lord Chancellor in thinking that the appeal should be dismissed with costs. Lord Lindley also agreed, in a long statement in which his Lordship first delivered his soul in regard to *Allen v. Flood*. That decision seems to trouble others besides the Lord Chancellor; and Lord Lindley practically reviewed it, which was an extraordinary thing to do. The reason seems to be that, while Lord Lindley and others are satisfied as to the validity of the general principle involved—that lawful acts are not actionable, even when done with a bad intention—yet they feel that the circumstances in *Allen v. Flood* were not rightly so innocent as the majority of the Law Lords considered them to be. Consequently, they appear most anxious that no undue extension should be given to the ruling in this case.

The matter is of such vital importance to employers of labour and the community at large, that it is worth while to state once more what it was that the defendant Allen did. He, being an official of the Trade Union, but not having authority to order a strike, went to the employer, and told him that unless the non-society men in the yard were dismissed, the union men would strike. This was the act of coercion of the employer which was alleged to be actionable, but was decided not to be so by the majority of the Law Lords. The proceeding of Allen was charitably held by their Lordships to be of the nature of imparting information of the men's intention, independently arrived at. This view was supposed to be supported by the circumstances that there had been no formal resolution of the Union authorizing a strike; that Allen had no authority in such a matter; and that it could not be proved that he acted in collusion with the men. Obviously, the excuse was very thin—indeed, almost transparent; and the Lord Chancellor, who is the embodiment of robust common sense, declares that he did not take this view of the facts, but he was outvoted.

All this goes to show how difficult and dangerous it will be henceforward for anyone to attempt to shield himself behind *Allen v. Flood* from the consequences of a malicious, albeit perfectly legal action. And this not merely with respect to inducements to break contracts of service, but on the whole range of the law of torts. It will extend to all acts done intentionally to damage an individual and actually damaging him. Lord Lindley thinks that the much-discussed case of *Templeton v. Russell* ought to have been decided, and may be upheld on this principle. Passing on to consider the heads of the Belfast case, Lord Lindley pointed out that it had been all argument; the defendants not having called evidence to justify or excuse their conduct. It was, in short, indefensible. As to being actionable, it contained every element necessary to give a cause of action on ordinary principles of law. As to defendants' methods and intentions, Lord Lindley showed himself to be under no misconception. It was all very well, he said, to talk about peaceable persuasions. Strikes are not conducted in kid gloves. "What may begin as peaceable persuasions may easily become, and in trade disputes generally does become, peremptory ordering with threats, open or covert, of very unpleasant consequences to those who are not persuaded. "Calling workmen out involves very serious consequences to such of them as do not obey. Black lists are real instruments of coercion, as every man whose name is on one soon discovers to his cost. A combination not to work is one thing, and is quite lawful. A combination to prevent others from working is an altogether different thing, and is *primâ facie* unlawful." Not working, to the extremity of becoming chargeable to the parish; orders given by a Trade Union official to men not to work when they are willing to work; a threat to an employer by a Trade Union official to call out men willing to work—all these actions are unlawful, and some amount to actionable coercion. There is a marked difference between what is indictable and what is actionable, in the law relating to conspiracy as in other branches, as the law of nuisance. An action will only lie for actual damage done and suffered; whereas the intention to cause damage is indictable. On the other hand, annoyance which may not be indictable may be actionable—as the less violent forms of besetting and boycotting; and those who have occasion to seek the protection of the Courts in such cases need not fear *Allen v. Flood*, which is now almost explained away.

RESPONSIBILITY AND VALUE OF DIRECTORS.

No more striking proof of the necessity for some reform in the legal machinery of this country could be desired than is afforded by the facts in regard to the case of *Dovey and Others v. Cory*—more generally known as the National Bank of Wales case—upon which judgment was pronounced in the House of Lords on the 1st inst. The first hearing of the case, before Mr. Justice Wright, was concluded on the 27th of February, 1899, when Mr. John Cory was ordered to pay to the Liquidator of the bank the sum of £91,787. This judgment was reversed by the Court of Appeal on the 2nd of August, 1899, when the case was commented upon in the "JOURNAL." The final appeal was not heard by the House of Lords until after the expiration of some sixteen months; the hearing being concluded on the 11th of December last. The judgment of the House has only now—eight months after hearing

—been delivered. That is to say, that for two-and-a-half years Mr. John Cory has been kept in suspense in regard to his liability or otherwise to pay out a sum of nearly £100,000. That such dilatory administration of justice should be even tolerated, let alone taken as a matter of course, is indeed a reflection upon the business qualities of this nation.

The facts of the case are very briefly these: Mr. John Cory was a Director of the National Bank of Wales for about seventeen years, ended December, 1890. In 1893 the bank was wound up voluntarily; and a Liquidator was appointed, who discovered that the shareholders had been for some time grievously deceived by the reports and balance-sheets laid before them. He estimated that £52,986 had been wrongly paid away as dividends; that £37,731 had been lost through advances and credits to Directors, and a further £43,087 through improper advances to customers. Before calling upon the shareholders to make good the deficits shown by the accounts of the bank, after all assets had been realized, the Liquidator sought to recover from Mr. John Cory, as a wealthy Director, the before-mentioned sums, on the ground that the latter had been guilty of misfeasance or breach of trust within the meaning of the Companies (Winding-Up) Act, 1890, although it was admitted that Mr. Cory had had no cognizance of the real state of the bank's affairs—having been deceived by the Chairman and the General Manager. Mr. Justice Wright gave judgment against Mr. Cory for £91,787—holding that his ignorance of the true position of the bank was the result of misconduct equivalent to fraud; but the Court of Appeal reversed this decision and gave judgment against the Liquidator on all points.

This judgment has now been upheld by the House of Lords, upon unimpeachable grounds. Counsel for the Liquidator had expressly stated that, in arguing for Mr. Cory's liability, he did not intend to impute to him any moral obliquity; so that the whole question to be decided was whether Mr. Cory was technically guilty of a breach of trust in not knowing what the Chairman and General Manager took care that he and the shareholders should not know—whether, for instance, he was to be held liable for not taking heed of the warnings addressed to the Board by the Auditors, of which warnings he never heard or knew anything.

As the Lord Chancellor said: The argument, that the fact that Mr. Cory, like the other Directors, did not attend to any details of business not brought before him by the General Manager or the Chairman rendered him liable for his resulting ignorance of the state of the bank's finances, "raises a serious question as to the responsibility of all persons holding positions like that of directors—how far they are called upon to distrust, and be on their guard against, the possibility of fraud being committed by their subordinates of every degree." Upon any such lines of suspicion and distrust, business could not be possible. A director is not required "to turn himself into an auditor, a managing director, a chairman," in order to find out whether he is being deceived by any of these officers. This is very plainly put by the Lord Chancellor: "If Mr. Cory was deceived by his own officers—and the theory of his being free from moral fraud assumes under the circumstances that he was—there appears to me to be no case against him at all." Lord Davey, in concurring, said: "I think the respondent was bound to give his attention to, and exercise his judgment as a man of business on, the matters which were brought before the Board at the meetings at which he attended; and it is not proved that he did not do so. But I think he was entitled to rely upon the judgment, information, and advice of the Chairman and General Manager, as to whose integrity, skill, and competence he had no reason for suspicion."

This is eminently a common-sense judgment, such as we have learned to expect from the House of Lords; but besides putting the responsibility of ordinary directors—as distinguished from managing directors and chairmen—upon a reasonable basis, it raises very pointedly a question so often present in the minds of those who know anything of the inner working of large joint-stock concerns—What is the practical value of "ordinary" directors? Plainly speaking, in regard to nine-tenths of them, absolutely nothing at all. The chairman, the managing director, or the general manager—whoever holds the strings—is, in practice, the supreme controller of an undertaking's fortunes. The other directors give their attention to, and exercise judgment on, such matters as are brought before them—the manner and light in which those matters are presented, and by which the judgment passed on them is probably materially affected, being determined by the holder of the strings!

If only the "great, wise, and eminent," men who spend an hour or so a week—if as much—sitting round a table, under the fond impression that they are "directing" some large industrial undertaking whose efficient management requires close and vigilant attention day by day, knew what practical men of business (and the subordinates whom they "direct") think and say of them, they would suffer a cruel blow to their vanity and sense of importance. Those "directors" may, however, console themselves with the reflection that this judgment of the House of Lords puts their legal responsibility upon a level with their utility.

The estate of the late Mr. Samuel Pope, K.C., has been valued at £74,024 18s. 6d. Deceased has confirmed the gift to the Rector of Llanbedr of the Star Inn, now known as the "Artro" Workmen's Club; and the premises are to be held in trust for use as a reading-room for the inhabitants of the village,

ELECTRIC LIGHTING MEMORANDA.

Losses at Croydon and Kingston-on-Thames—Financial Weakness of Municipal Electricity Supply Undertakings—The Foolishness of Some Electricians.

THE smaller municipalities who sowed their wild oats so blithely, in the form of electric lighting ventures warranted by the eminent electricians who arranged them to pay handsomely towards the relief of the rates, are beginning to gather in the distressing harvest. In the case of Croydon, the Auditor of the accounts of the electricity supply department reports that while there is no legal obligation to charge against profits more than interest and sinking fund, yet depreciation is really a greater charge than the sinking fund. If, instead of being a corporation department, the electric lighting business at Croydon had been in the hands of a company able to borrow money at 3 per cent., the trading would, in his opinion, after writing off sufficient depreciation, show a heavy loss. This frank communication was more than the Chairman of the Electricity Committee could stand. He simply denied the impeachment, and declared that if the undertaking had belonged to a company they would have paid 5 per cent. since they started and still have £5000 in hand. So the minutes were approved; and Croydon, like the others, will have nothing to say to depreciation. A worse case is that of Kingston-on-Thames, where, after seven years' trading, there was a loss last year of £2721. The total deficit from the start amounts to £8680; and the capital account is not closed. Of course, there is no depreciation. It is not difficult to foresee the end of many of these small municipal speculations in electricity. They will rub along as well as they can for some few years longer; and then, wherever possible, they will be quietly melted into the electric tramway service. Their trace will afterwards be as completely lost to the ordinary ratepayer as are already the wonderful dust destructor "gold mines" which were to do such miracles at certain places that could be named.

The financial weakness of the smaller municipal electric lighting undertakings is exposed in an instructive article in the "Electrical Review" for the 2nd inst., which every county newspaper in the land ought to reproduce. The text of the article was supplied by the case of Tonbridge, where the Local Government Board have authorized an electric light loan on the request of the majority of the Urban District Council, though on a poll of the ratepayers a large majority voted against the scheme. This is another instance of the apparent determination of the authorities always to take the Council as representing the locality. It is a hint to ratepayers to place the right men in power. One cannot understand what happened at the local inquiry in the case of Tonbridge; for this is the opportunity expressly provided for securing an expression of the independent views of the ratepayers. If they are seriously opposed to a council scheme, then is their chance of upsetting it. Our contemporary passes on to observe that the electricity supply accounts of several local authorities issued during the last few weeks will not be found pleasant studies for ratepayers who are being persuaded or forced into similar speculations. There is Coventry, where the gross profit on the fifth year's working shows a deficit of £2250; and, of course, not a penny has yet been put by for depreciation or antiquation of the plant. Bedford is another sad example, with a loss of £911 on the sixth year's working of plant that cost £77,000. And many other towns are in the same case.

Electricians are very clever people, and one would fain respect them accordingly; but it must be confessed that the record of electrical trading in England is marred by some notable pieces of foolishness. Their early escapades in the matter of "tower" lighting are not forgotten, either by those whose money was wasted in this tomfoolery or by those who, like ourselves, pointed the finger of scorn at the whole thing from the first, and persevered in the attitude until the last "tower" was ignominiously thrown down and broken up for scrap. Then there was the forced performance of the introduction of electric warming and cooking appliances, which the respectable firm of Crompton and Co., Limited, were going to do such great things with, or perish in the attempt. Again, there were those who laughed at the idea that there was any money in this toy department; and we were of the company. Now, at the meeting of Crompton's, Limited, the other day, the Chairman (Mr. John Trotter) said that the Directors "had entirely wiped out the cooking and heating item." So there is an end of that nonsense. The newspaper puffs of electric cooking and warming, which were common enough some years ago, cannot be pleasant reading for those who committed Crompton's and other firms to this absurdity. Of course, those who are able to see through these pieces of idiotcy at the time get no thanks for their persistent pouring of cold water on the hot heads responsible for them; and when the inevitable crash comes, there is little satisfaction in being able to say, "I told you so!" Lastly, there is the dust destroyer fallacy; but that is a more serious matter than the others, inasmuch as the money that has been thrown away upon it is public money.

Owing to the promotion of Mr. Francis Hopwood, C.B., C.M.G., to the position of Permanent Secretary to the Board of Trade, in succession to the late Sir Courtenay Boyle, the assistant secretaryship of the Railway Department became vacant. This has been filled by the appointment of Colonel Sir Herbert Jekyll, R.E., K.C.M.G., Acting Secretary of the Embassy in Paris,

THE GAS AND WATER STOCK MARKET.

(For Stock and Share List, see p. 407.)

It almost goes without saying that the Stock Exchange had a quiet time in the week just closed. The markets re-opened on Tuesday after the holiday interval from the previous Friday; but they still retained a holiday appearance, for the attendance was very scanty. Of any pronounced tendency, there was, of course, no indication; but Consols looked favourable. From this point forward the tone gradually improved. People took a more cheerful view regarding progress in the pacification of South Africa, and the Railway Market was not quite so despondent as it had been; so that more buyers were to be found than had lately been the case. This feature was to some extent aided by the tone of the Money Market, which was abundantly supplied, and easier rates prevailed. In the Gas Market, the effects of the holiday season were very apparent, and business was extremely limited and wholly devoid of feature. There was hardly any movement whatever, changes of quotation being confined to one or two slight and unimportant items; but they were in the upward direction. The chief topic is still the Gaslight and Coke Company's meeting, and the project for floating fresh capital by the aid of a voluntary surrender of some dividend on the part of the ordinary shareholders. Holders of stock in trust seem to think that they will not be justified in adopting this self-denying ordinance, and then perhaps other holders may fail to see any reason why they should give up a share of their profits if all the rest do not. It seems a pity that the scheme, which appears feasible enough if properly managed, was not put to the proprietary by formal resolution and previous notice. A resolution to divide £2 3s. per cent. and to apply the other 1s. to the purpose specified would, no doubt, have been carried. In Gaslight ordinary, there was no movement; but the preference had a rise of one point. Very little was done in South Metropolitan; and the accounts issued last week have not yet put the price up. Nothing at all was done in Commercials. There was no movement on the London Market in the Suburban and Provincial group responsive to the favourable accounts which many undertakings have been able to present; but locally Liverpool advanced a point. All the Continental Companies were very quiet and unchanged; and the same may be said of the other concerns in the remoter world. The Water Companies showed a little more animation, and prices were firm; but no actual change in quotation occurred.

The daily operations were too insignificant to chronicle at length, for transactions every day were extremely few in number and devoid of feature.

THE REPORT OF THE ROYAL COMMISSION ON LOCAL TAXATION.

[Second and Concluding Notice.]

The majority of the Commissioners, while assuming that the complete separation of Imperial and Local finance is the object to be kept in view, and that the diversification of the latter is still to be effected by the surrender of particular revenues, do not consider that it would be either possible or expedient that any complete settlement of these problems should be immediately effected. The evils which are inherent in the existing system of local finance are of too old a growth, and are too far-reaching in their character, to be capable of immediate removal without a dislocation of present fiscal arrangements which would give rise to a maximum amount of inconvenience and waste. All that it is possible to do now is to indicate the principles to be recognized, the general lines upon which reform should proceed, and the first and most obvious practical steps which might be taken in the direction proposed. Here, it is well to notice, is the point at which several of the Commissioners begin to differ from the majority. We shall follow first the observations contained in the majority report.

The *crux* of the whole matter is the relative positions of rateable and non-rateable property in regard to local taxation. There is scarcely a statesman of the first rank who has given attention to the subject of local taxation, who has not frankly admitted the existence of a serious grievance on the part of owners of rateable property in this respect. They have all agreed that to place the cost of every action taken by a Local Authority on one kind of property alone is inequitable, and ought not to be persisted in. Mr. Goschen in 1888 made the first advance in the direction of remedying this injustice to ratepayers, by transferring a moiety of the then existing probate duty from the scheme of Imperial to that of local finance. It is the opinion of the majority of the Commissioners that this reform has not gone far enough. Actually, not more than 6·1 per cent. of the aggregate local revenue (exclusive of elementary education) is levied upon non-rateable property; and this is rather over-stated. The immediate question is, what other assistance might be rendered in the same sense.

This question raises the whole order of considerations attaching to the assigned duties; and the majority report strongly advocates the application of the inhabited house duty to the relief of local rates. A whole chapter is devoted to the discussion of the many proposals for the extension of this principle, together with the particular claims which the Local Authorities have upon the National Exchequer, that the Commission had to pass in review. These matters are beyond the "Journal" province; and we must therefore content ourselves with the observation that the report contains a mass of information on this complicated subject. The thorny question of the intention that underlay the Act of Elizabeth is returned to in the succeeding chapter; and here the Commissioners pluck up heart to state that the theory of this Act, on which the whole system of local rating was founded, seems to have been that the rates were to be a kind of local income-tax, towards which every member of the community was to contribute according to his means. There was a practical difficulty in rating invisible personalty, however; and never since has Parliament been in a position to comprehensively legislate on the subject. The result has been that rateable property has fared badly throughout the centuries. The agricultural interest has fared worse than any other—being frequently burdened for the cost of such services as water supply, lighting, and scavenging, from which it has not derived the smallest benefit. This has been a sore grievance in small towns with a large rural fringe.

A chapter of the report is devoted to the question of the rating of land values; and it is observed that this proposal originally started as a demand for the taxation of ground rents. In this crude form the demand, which is a familiar commonplace of the Progressive platform in municipal politics, is dismissed as inequitable and unpractical. Nevertheless, we expect to hear as much of it as ever; for the politicians who traffic in such cries are very careful not to read Blue-books. The subject was very thoroughly gone into by the Select Committee on Town Holdings, whose conclusions the Commission unreservedly accept, after taking abundant evidence on it themselves. While not denying that it might be possible to value sites and ground rents, for special taxation, irrespective of the use to which the land might be put, the Commissioners state that this would not in their judgment be worth doing; neither would it be fair.

The valuation of special properties for rating purposes forms the subject of a separate chapter. The first of these special properties to be considered is machinery; and those who are interested in this subject must procure a copy of the Blue-book and study what is said about it, as a matter of course. It is impossible within the limits of space at our disposal to do justice to the thorough way in which the Commissioners have gone into the history and development of this vexed question. In principle, according to the Act of Elizabeth, machinery is as fairly rateable as stock-in-trade. Practically, it usually does not bear local taxation. There is reason for thinking that the time for imposing such an additional burden on the owners of machinery is past. It is admitted that the present law of the subject is in an unsatisfactory state; but it is open to be remarked that the same might be said of every division of the law. Here, the trouble is that no one can in any given case say with certainty what machines are, and what are not, to be taken into account in ascertaining the rateable value of the factory in which the machines stand. The result of this uncertainty is that a great divergence of practice exists among the Rating Authorities in different places, which causes great dissatisfaction. Unfortunately, it is practically impossible to distinguish rateable from unrateable machinery by any system of definition or enumeration. Having regard to all the history and circumstances of the case, the Commissioners support the proposals contained in the Rating of Machinery Bill, 1899, as offering a fair solution of this difficult problem. They therefore recommend that "in estimating the rateable value of any hereditament occupied for trade, business, or manufacturing purposes, there shall be excluded from the assessment any increased value arising from machines, tools, or appliances which are not fixed, or are only so fixed that they can be removed from their place without necessitating the removal of any part of the hereditament. But the value of any machinery, machine, or plant used in or on the hereditaments for producing or transmitting motive power, or for heating or lighting the hereditament, should be included."

The section of the report on the rating of railways is full of valuable information. The Commissioners prefer the Scotch and Irish systems of assessment (which they describe) to the English. They recommend the appointment of an Official Assessor of Railways, who should be paid jointly by the Valuation Authorities and the Companies. He would first value every undertaking as a whole, and the stations would be rated to the districts where they occur. It is suggested that the valuation of the line should be by train-mileage. The rating of gas-works is considered in the category of "Special Properties," which have much in common in this respect with railways. The witnesses who came before the Commission did not complain so much as to the amount of the valuation as to the inequality of it in different places. In a note to this part of the report, it is remarked that there appears to be a great want of unanimity as to the best method of amending the system of valuation of this class of properties, especially gas and water works. Mr. Wilkins, the Secretary of the Lambeth Water-Works Company, suggested a sliding-scale under which the rateable value would depend upon the relation between the profits actually divided and the total capital outlay.* He would take no account of profits applied to the reduction of the price of gas or water. Mr. Livesey sees difficulties in Mr. Wilkins's plan and suggests a scale for fixing the amount of rates payable according to the volume of gas sold. Mr. H. E. Jones recommends capital value as the basis; and Mr. C. Crowther Smith, while objecting

* See "Journal," Vol. LXXVI., p. 106.

to capital outlay, and also to Mr. Livesey's proposal, suggests a system for determining the rateable value which would depend upon the income-tax assessment.

Mr. Livesey prepared a memorandum for the Commission, in which he condemned the existing system as tending to excessive assessments, especially in the case of gas companies. In support of his views, he cited the Lewisham case, where the parish is served by two Gas Companies. The same Rating Surveyor advised the Assessment Committee to settle with the Crystal Palace District Gas Company at a rateable value of 4 per cent. on the receipts for gas in the parish; while claiming 21 per cent. (reduced on appeal to 16¾ per cent.) on the receipts of the South Metropolitan Company. Mr. Crowther Smith, the Secretary of the Southampton Gas Company, who was for 36 years Clerk to the Guardians, pronounced the present mode of assessing public companies to be "most uncertain, unjust, and enormously expensive." Mr. H. E. Jones said that "the result of the present system is to create the greatest possible inequalities, and occasionally to inflict hardships." The Commissioners do not think it desirable, or even possible, that they should make any recommendation with regard to the actual procedure to be adopted in ascertaining the annual value of these properties. There must always be some difference of opinion among valuers on the question of what a hypothetical tenant might reasonably be expected to pay; but the Commissioners think it of great importance that the valuation of these special properties should be centralized as far as possible, and undertaken by the most skilled class of valuers. Point is given to this observation by the suggestion that if a Government Valuer of Railways is appointed, as previously indicated as being desirable, this official might be made available for the valuation of special properties. If this were done, the parties would have the advantage of getting the properties valued by experts accustomed to valuing the same classes of property in different parts of the country, who would have no local interest in the results of the valuation. When properties are valued in this way, it is thought that the cost should be defrayed by those interested in the valuation. Very willingly would they do it, if we understand their ideas in regard to the merits of the existing system of valuation on commission!

We do not propose to discuss at length the various separate recommendations and reports of individual members of the Commission. Some of these are of great weight, and others are of curious interest. Lord Balfour of Burleigh, the Chairman of the Commission, has several ideas to offer—one of them being that Local Authorities might have the right to tax posters and similar advertisements for the benefit of the local revenue. He also thinks that pleasure horses and bicycles should be taxed for the maintenance of the roads. Mr. E. Orford Smith has a word to say concerning the apportionment of the burden of the national services between the urban and rural ratepayers. Mr. James Stuart, as another townsman, is jealous of the tenderness shown towards rural ratepayers. Sir Edward Hamilton and Sir George Murray dissent from their colleagues altogether. They object *in toto* to the superfluity of Local Authorities, and pass in review all the financial relations of these bodies. They crystallize the ratepayers' grievance in the happy phrase that local rates only fall upon "immovable" property. Consequently, people are rated for local expenses, not in respect of their means, but only on the value of the immovable property which their circumstances compel them to occupy in their concerns. This injustice, they admit, has been "doctored" by the system of assigned revenues; but they complain that the remedy does not suit the disease. Instead of endeavouring to adapt the existing arrangements to the true needs of the country, which is the aim of the majority report, these logically-minded Commissioners desire to reform the system altogether. We much regret that space and other considerations prevent our examining this particular report as thoroughly as its merits deserve.

In addition to the foregoing, there is a separate report signed by the Chairman and five Commissioners on urban rating and site values, which differs from the majority report on this subject in several respects. It is a valuable disquisition upon the various systems of land tenure in vogue in the United Kingdom, exhibiting their results as regards rating. Again, we regret that it is beyond our province to deal at length with this branch of the inquiry. It is only right, however, to place it upon record that the Blue-book is a mine of information on the subject, to which those who are interested in it may return again and again with profit. As to the independent report by His Honour Judge O'Connor, K.C., we can only say that it differs essentially from the others in proposing that all revenue for local purposes should be raised on land values alone. This report is well worth reading, whether one agrees with the main contention or not.

The Institution of Mining Engineers will hold their twelfth annual general meeting in Glasgow from the 3rd to the 6th prox., and the Secretary (Mr. M. Walton Brown) has issued an *agenda*-programme which shows that there will be plenty of both business and pleasure to occupy the time of the members. Among the papers to be submitted are the following: "The Oil-Shale Fields of the Lothians," by Mr. H. M. Cadell; "The Manufacture of Coke," by Mr. F. C. Keighley; "The Use of Armoured Concrete," by Mr. F. C. Eliet. The excursions will include visits to collieries in the Hamilton district and to the shale-oil works of the Broxburn Oil Company, Limited.

PERSONAL.

Mr. W. J. Hartley, formerly Chief Clerk in the office of the Drighlington Gas Company, has been appointed Secretary and Manager of the Gomersal Gas Company.

At to-day's meeting of the Carlisle City Council, a resolution of the Gas and Water Committee to allow Mr. C. B. Newton to continue to hold the position of Gas and Water Engineer is to be considered.

The workmen employed in the works of the Brechin Gas Company have presented Mr. Allan Reid, the Manager, with a marble timepiece and silver teapot, on the occasion of his marriage. The teapot was a gift to the bride.

The Directors of the Littleborough Gas Company, at their meeting held last Thursday, appointed Mr. S. E. Halliwell Manager and Secretary, in succession to the late Mr. Cockcroft, to whom, it may be remembered, Mr. Halliwell was assistant.

Mr. Henry Haselden, who has been Secretary to the South Staffordshire Water-Works Company for the last 38 years, has resigned, and the Directors have granted him a retiring allowance of £400 a year as from the 1st ult. Mr. G. J. Sparrow, who has been Chief Clerk in the Secretary's office for ten years, succeeds Mr. Haselden.

At the recent half-yearly meeting of the York United Gas Company, general satisfaction was expressed at the step taken by the Directors in placing upon the Board Mr. Charles Sellers, who had served the Company for so many years as Manager and Secretary. In acknowledging the vote of thanks to his colleagues, Mr. Sellers said he had done his best for the Company; but his work had been a labour of love. His interest in the undertaking would not be changed; and so long as he could work, he would do so for the Company. Unfortunately, this desire to be of still further use to the concern with which he has been so long associated, has been curbed—we sincerely hope only temporarily—by illness which has recently confined Mr. Sellers to his room.

At a very pleasant gathering which took place in the Lord Mayor's parlour at the Manchester Town Hall last Wednesday, to commemorate the golden wedding of Mr. Charles Nickson, Superintendent of the Gas Department, and Mrs. Nickson, the former was presented by Alderman Gibson, Chairman of the Gas Committee, on behalf of the officials, with a service of silver plate, and the latter was asked to accept, from the Committee, a gold chain and brooch. The gifts were accompanied by an illuminated address bearing the names of 409 of the employees of the department. Mr. Nickson has been in the service of the Corporation 57 years, and for 43 years has been connected with the Department, of which for the past 18 years he has been Superintendent. There was a numerous gathering, which included the Lord Mayor and the Lady Mayoress.

OBITUARY.

A large measure of sympathy will, we are sure, be extended to Mr. Magnus Ohren and his family, in the bereavement they have sustained by the death of Mrs. Ohren, which took place on the 1st inst.

A considerable section of our readers will unite in an expression of sincere sympathy with Mr. Alexander Dickson (the late Secretary of the Kent Water-Works Company, and the present Chairman of the Bromley Gas Consumers' Company) in the unexpected bereavement he has sustained by the death of his daughter, Mrs. Florence Rayden, who was but thirty years of age. A day or two preceding her death, which occurred last Friday week, Mrs. Rayden complained of internal spasmodic pain. The local medical attendant was consulted; but the patient becoming worse, a specialist was summoned, and an operation was decided upon. During the operation, the sufferer collapsed and passed away. Vivacious, accomplished, and loving, her death has created a blank in the family circle of Mr. Dickson, with whom many sorrow.

Sterilization of Drinking Water.—In a communication by M. Bergé to the "Mémoires de la Société des Ingénieurs Civils de France," of which an abstract translation appears in the "Proceedings of the Institution of Civil Engineers," the author recommends the use of perchloric acid for the sterilization of drinking water. A concentrated solution of perchloric acid is prepared by acting on potassium perchlorate with sulphuric acid (58° Baumé), and passing the gas evolved into water, by means of a current of air at constant pressure. One milligramme of perchloric acid is sufficient to sterilize a litre of water; and the operation can be performed on any scale with equal facility. The French Board of Public Health have adopted the conclusions of various scientific authorities in support of the efficiency and innocuous character of the method. The process is being used at Lectoure (Gers, France) and at Ostend; while in Brussels, sewage water containing a million bacteria per cubic centimetre (16 million per cubic inch) has been wholly cleared of germs by treatment with perchloric acid. The cost of the reagent should not exceed 0·26 c. per cubic metre (10s. per million gallons) of the water to be sterilized, even with bad water; while the charges for maintenance and for redemption of plant would, it is claimed, be extremely low.

NOTES.

Estimating Nitrogen in Sulphate of Ammonia.

At the recent meeting of the Société Technique du Gaz en France, M. Fabre described in a short paper a method for rapidly estimating the quantity of nitrogen contained in sulphate of ammonia. Put concisely, it is as follows: Prepare a normal solution of caustic potash by putting 56 grammes into as much water as will make up 1 litre, and call it solution A. A cubic centimetre of this solution will neutralize 0·049 gramme of sulphuric acid. Take 100 grammes of the sulphate to be tested, and add thereto sufficient water to make 1 litre—calling this solution B. Pour 10 c.c. of this into a flat clear glass dish standing upon white paper, and add tincture of litmus until the solution becomes red; shaking the mixture during the process. Add with a burette enough of solution A to turn the mixture blue. Let the quantity of solution A be N c.c.; then this will correspond to $N \times 0{\cdot}049$ gramme of free acid in 1 gramme of the sulphate, or 4·9 grammes in 100. Consequently, there will be only $100 - 4{\cdot}9\,N = 95{\cdot}1$ grammes of neutral sulphate; and as 100 grammes of pure neutral sulphate contain 21 grammes of nitrogen, the above-named quantity will contain 19·971 grammes. The method is based on the principle that the maximum content of nitrogen in sulphate is 21 per cent., though according to the method of analysis adopted by Boussingault it may reach 21·21 per cent. The author, however, considered it advisable to take the lower figure. He claims less variation in the results obtained by his method than by that of Boussingault.

The Scaling of Steam-Boilers.

The scaling of steam-boilers is a source of trouble that most steam-users have been warned to regard very seriously; yet, according to a paper by Mr. W. H. Bryan, there is abundant evidence of the most reliable and definite character showing that evaporative trials of boilers when clean and also when scaled do not exhibit any material difference of capacity. This is particularly true of locomotive boilers, when careful records are kept over long periods of time. Loss of efficiency has been shown in some cases; but whether this is due to the presence of scale inside the boiler, or to soot outside the plates, has remained undetermined. The character of scales, of course, differs very widely. Where a scale is hard and thin, it is useful rather than deleterious, as it helps to preserve the plates from pitting. Where the deposit is thick and porous, the water penetrates through it to the shell, and the boiler consequently works as well as ever until the deposit becomes thick enough to hinder the circulation. Inquiry at a large locomotive shop ascertained the fact that the pulling capacity of the engines did not appreciably suffer until the entire space between the tubes became filled up solid. Experience tends to show that the loss of fuel ascribable to scale was usually overestimated in the old text-books. The real danger of excessive scale is the risk of burning the plates, not excessive fuel consumption. This raises the question of how to compute the heating surfaces of boilers. It is remarked that a thin coating of soot outside a boiler plate or tube wastes more fuel than any thickness of scale inside.

Utilizing the Waste Heat of Refuse Destructors.

A useful paper was read by Mr. J. S. Highfield, the Electrical Engineer to the St. Helens Corporation, at the recent convention of Municipal Electrical Engineers, upon the economy of combining town's refuse destruction with the generation of steam for electric lighting. Mr. Highfield confined himself to his own experience, as he found considerable difficulty in getting information from other sources. The destructor plant at St. Helens is on the Beaman and Deas system, worked with fan draught. The fuel value of the local refuse is distinctly good, as is usually the case in the North of England. Over the year's working of a two-furnace refuse destructor, disposing of an average of 188 tons weekly, there was realized about £450 worth of electricity, taken at the cost price of 0·3d. per unit. From this saving, there fell to be deducted £50 for boiler repairs; and the interest (£90) on the extra cost of the special plant, estimated at £1500. This leaves a gain of £310, which Mr. Highfield very properly puts to the credit of the expense of destroying the refuse. But for this utilization of the heat, the refuse destruction would have cost 2s. 6·6d. per ton; whereas with this credit, the cost was brought down to 1s. 11d. per ton. Mr. Highfield sums up the question by stating that in certain cases where a suitable site for destructor and electric works exists, and where the works are not very large, the combination can be usefully made, where a traction or other good all-day load exists. For a very large works, or for a station which has only a lighting load, there are not many instances where there is any commercial value in the combination.

Artificial Indigo.

The prospects of the trade in artificially made indigo are naturally of great interest to those who are concerned in the cultivation of the natural Indian product. It has been explained to the Society of Arts by Professor R. Meldola that there is no chemical difference between the two preparations, which are of exactly the same composition. Artificial indigo, made by the Badische Fabrik, has now been placed on the market at a price that competes with that of the natural dye. It is chiefly made from naphthalene, and is the fruit of sixteen years' research and expenditure. Meanwhile, it is more than suspected that the indigo planters shut their eyes to the threatened competition, and only began to awake to a sense of what had been going on when synthetic indigo actually appeared in the market. The bulk of the naphthalene recovered at the Beckton chemical works of the Gaslight and Coke Company is now absorbed for this manufacture. The practical process has been developed by Dr. Brunck, from the original synthesis of Heumann. The Company have already sunk £900,000 in the indigo process plant. The naphthalene is converted into phthalic acid by the action of strong sulphuric acid and mercury. A large quantity of acid is required, and it is made by the Company by the catalytic process originally patented in this country by Phillips, in 1831. Other materials used are caustic soda and chlorine, the latter obtained by an electrolytic method. The steps are phthalic acid and anhydride, phthalimide and anthranitic acid. The other material is chloracetic acid obtained by the chlorination of acetic acid. Anthranilic acid and chloracetic acid interact readily with the formation of phenylglycin-ortho-carboxylic acid. The alkaline fusion of the latter is conducted so as to produce the intermediate product, which oxidizes to indigo by atmospheric oxygen. The perfecting of the last stage alone occupied many years of labour. The cost of making the artificial indigo is not published; but the necessary naphthalene is cheap and unlimited in quantity.

Liquefaction of Hydrogen.

The latest stages of the liquefaction of hydrogen and its results have been described in "Nature." It is recognized that this operation forms the last of the definite stages, so far, in the progress towards the realization of the absolute zero of temperature. The starting-point of this long procession was the observation of Faraday connecting the boiling-points of various substances with the atmospheric pressure. Pictet in 1877 introduced the cascade system of refrigeration, and thought he succeeded in liquefying and solidifying hydrogen, though he was probably mistaken. The research was continued by other workers, and by different methods, leading up to the success of Hampson's system, by which air begins to liquefy in less than ten minutes, without the use of auxiliary refrigerants. There was still a gap, however, between the production of liquid air and the liquefaction of hydrogen, which was effected by Professor Dewar in 1898. Ramsay and Travers have already turned liquid hydrogen to useful account in their researches on the rare inactive gases of the atmosphere, particularly for the separation of pure neon. One of the results of liquefying hydrogen has been to bring out the volatility of helium. It is possible, therefore, to reach a lower temperature than that of liquid—probably even of solid—hydrogen by applying to helium the same process of free expansion with intensification by counter-current exchange which has succeeded in liquefying hydrogen. But helium is an exceedingly rare gas; so that the expense of further advances in this direction will be very great. Moreover, the most volatile gas probably becomes solid, and loses practically all vapour tension, at a temperature above the absolute zero; so that for the attainment of that interesting point no combination of the three methods of cooling above described will suffice. Yet another system of pumping energy will have to be devised before any portion of matter can be absolutely deprived of heat; and it is for the discovery of this fourth method that observers interested in low-temperature research are now waiting.

COMMUNICATED ARTICLE.

MODERN METHODS OF DISTRIBUTING GAS.

By Norton H. Humphrys, Assoc.M.Inst.C.E., F.C.S.

Up to a comparatively recent date, the whole of the motive power for distributing gas was invariably provided by one apparatus—the exhauster. Though the name of this appliance infers that it acts as a puller rather than as a pusher, and that its function is to draw the gas away from the retorts, its real duty is that of raising the pressure to a sufficient degree to enable the gas, not only to get into the holders, but to travel to the farthest parts of the district. The gasholder is usually credited with doing the work of distribution. But it has no more claim to this than the accumulator on a hydraulic power apparatus has to being the source of the power. The exhauster has to force the gas through the washers, scrubbers, purifier, and meter, and then to send it into the holder. The strap or the crank that actuates the exhauster, represents the whole of the mechanical power applied to the work of distributing the gas; and the exhauster, rotary pump, blower, or whatever we call it, still remains the real motive power. We may put it where we like, between the inlet to the generating apparatus (if there is one) and any suitable position on the distribution system; but the result is the same. We rely on the rotary pump as the means of distributing the gas.

In large modern works, however, we frequently find that the gas passes through a second, or even a third, pressure-raising apparatus, before it reaches the users. One pressure-raising operation, and that at the outlet of the condensers, is usually considered sufficient. But there is a tendency to divide this work into two

stages, by taking the gas in hand at the inlet of the holder, or by using light holders and increasing the pressure at the outlet. The pressure required for distribution, in contradistinction to that necessary for passing the gas through the purifiers and meter on the works, forms a natural division of the subject into two stages. A Sturtevant blower worked by a Westinghouse gas-engine, and used for transferring gas from a lighter to a heavier holder, was an interesting item on the occasion of the visit of the Southern Association of Gas Engineers to the Bournemouth Gas-Works in June last. Pressure raisers have for some years past been employed by the Gaslight and Coke Company in connection with their system of high-pressure trunk mains, for conveying gas supplies a distance of several miles. From these operations, it is not a very wide step to taking the gas in hand at the outlet of the station-meter by means of a pressure-raising apparatus, thus allowing the pressure at that point to fall to zero, and enabling lower pressure to prevail in the purifier-house—the advantage of which is obvious. And this, in its turn, suggests that there is no reason why the whole of the gas supply must necessarily pass through the holders, and that some considerable proportion (perhaps the bulk) might be sent direct to the consumers. With continual improvements in the reliability and efficiency of blowing machinery, the simple but costly holder may be largely displaced by mechanical distribution, as it must be if supply pressures greater than a few inches of water should come into use.

The idea of even partially dispensing with gasholders is so much opposed to established practice, that those who have been trained in, and are accustomed to, the ordinary routine of coal-gas manufacture, are inclined to regard it as being outside the range of practical politics. The good old rule of a maximum twenty-four hours' storage, still has its adherents. The gasholder certainly belongs to the class of apparatus and individuals that is "willing to make itself generally useful"—now growing smaller by degrees, and beautifully less. Under ordinary circumstances, it covers at least three distinct requirements. It is a reserve against a sudden and unforeseen overtaking of the production by the demand, enabling the manufacturer to keep several hours ahead, and to guarantee a full pressure in the mains from one year's end to another. It not only stores the gas, but also stores distributing power received from the exhauster, resembling in these respects the accumulator used in connection with hydraulic power apparatus. It further acts as a mixing chamber, not only keeping up a continual supply, but also a uniform quantity at the outlet, independent of considerable variations in the inlet quality from minute to minute or from hour to hour. Altogether, the gasholder is regarded as indispensable; and no gas engineer of experience would trust to one holder. Even in the smallest works, we find at least two, so arranged that one can be always in use.

The means by which the gas is generated must of necessity have a great effect on the amount of storage required. If we had a system that could be relied upon to produce a constant quality of gas, unvarying from minute to minute, adjustable as regards quantity between the maximum and minimum rates of consumption, and, further, had our purifying arrangements so efficient as to take care of the maximum rate of production, and avoid all risk of supplying impure gas, the question of storage might become indeed unimportant. But the methods of generating gas at present in operation are confined to two—the retort and the cupola. Although there are many so-called processes for making gas, they all come down to one or the other of these; and one is reminded of the thousands of "patents" that have been taken out in connection with such a simple operation as the generation of acetylene.

The retort takes about three days to get into working order, starting cold. When put to work, it is very stiff and inelastic as regards production, and cannot be allowed to stand idle without damage. It has one fixed rate of production, which may be 5000 or 10,000 cubic feet per twenty-four hours, according to the size and description of setting used, which must be adhered to within a margin of 10 per cent. either way. Thus a considerable portion of the storage capacity is occupied in taking care of the variations in demand on an inelastic and saltatory production. It is better to have a good margin of storage, so that the retorts in use may be kept in steady work—not standing idle on the one hand, or being forced or strained to meet an increased demand on the other. Given an ample storage margin, the manager of the works can arrange the number of retorts in use according to the season of the year, in such a way as to meet these conditions. With the retort there is also a variation in yield and quality throughout the working of the charge. But this objection is neutralized by the fact that it is a very small unit, and a considerable number must be in operation. By charging in rotation, it is easy to work in such a manner that both quantity and quality of gas produced are fairly regular at the outlet from the foul main.

The cupola, as usually worked, with alternate blows and runs, brings in quite a different state of affairs. It possesses some elasticity, as the rate of production per 24 hours can be varied considerably without violation of economical conditions; it admits of a certain amount of standing idle; and it can be put into operation in a few hours. But there is a larger variation in the rate of production, and also in the quality. The gas is made in spurts, instead of in one even flow; and the cupola is a comparatively large unit. To put a sufficient number into operation to ensure a regularly steady production from minute to minute, is rather a large order; and sometimes the use of subsidiary storage in the form of a relief holder becomes necessary, in order that the gas may be reduced to one steady, even flow for the purpose of purification. While the water-gas cupola diminishes the importance of holder capacity when regarded as a reserve, it increases the need for it as a mixing-chamber.

The only practical objection to the gasholder is that it cannot be used for high pressures. The principles involved in its structure are such that it is limited to about 12 inches head of water. Within this limit, it is perfect in operation. Occasionally an æsthetic howl is raised as to the ugliness of the structure; but there is nothing serious in this, as the average Briton would not agree to even a trifling increase in the cost of gas for the purpose of beautifying holders or of doing away with such blots on the landscape. Indeed, we may question whether his objection to shams in any form would not lead him to prefer, apart from any question of cost, that the holder should stand exposed in honest ugliness, rather than be concealed inside a dummy castle, opera house, or heathen temple. The real difficulty with the holder is the financial one. The interest on capital and cost of maintenance of a twenty-four hours' storage capacity means a charge of not less than 3d. per 1000 cubic feet of gas sold; and this charge has no relation to quality. The cost of storage for a million cubic feet is the same, whether we have the cheapest producer gas, two-thirds of which may consist of nitrogen and carbonic acid, or a rich 100-candle oil gas. With the latter, the cost of storage is an inconsiderable proportion; but the case is different when dealing with cheap fuel gas. If the selling price is 1s. 3d. per 1000 cubic feet, the cost of storage bulks as 20 per cent. of the whole. In such circumstances, the cost of storage may be greater than that of the staple material, and under ordinary conditions of gas manufacture it may approach the net cost of the coal; so that even a moderate reduction in the storage capacity would be a boon not to be despised.

At one time, the gasholder was regarded as a reserve in case of accident resulting in the make of gas being stopped for some hours. But gas-generating apparatus is now so fully understood that it is not necessary to stop gas making in order to investigate and find out what is the matter; and if reasonable care is taken to keep all in order, we may run along comfortably from one year's end to another without having to slack out even a single retort. The consumption of gas is also more even over the twenty-hours; and therefore the reserve held in stock need not be so large as was prudent at an earlier stage of our history, when gas making was not so well understood, and when the load-factor diagram (had such a thing been thought of at that time) would have been more remarkable in the matter of peaks than it is under modern conditions, and would have some resemblance to that obtained at an electricity supply works. Taking the summers of fifty years ago, there was no gas consumption worth mentioning between midnight and 8 p.m. the following evening; and the variation between maximum and minimum stock of gas during the twenty-four hours was as much as 80 per cent. of the output. But now, in a town doing a fair cooking and engine business—which means about one cooker to every 2 or 2½ consumers, and one engine to every 40—the demand for gas during the breakfast and dinner hours usual in the district will come close up to the highest evening consumption, and engines and other appliances will be drawing on the mains all day; causing the difference between the maximum and minimum stocks in the twenty-four hours to be not more than 20 per cent. The greatest difficulty in the way of variation of demand arises during the winter, when it follows closely on variations in the thermometer. A sudden frost, following comparatively mild weather, may send up the consumption 20 per cent.; but a reasonable reserve of water-gas plant will take care of this little matter. While, however, a large reserve stock of gas is not so imperative as formerly, a reasonable proportion of gasholder capacity is an indispensable adjunct to the retort or cupola as usually worked.

At this point, I would like to pause for a moment in order to re-echo the lament uttered by Mr. George Tangye (*ante*, p. 217), that the article usually spoken of as "coal gas" is without any more definite name. A writer dealing with the science or practice of gas supply, is to a large extent dependent upon unwieldy generalisms, such as "coal gas," "carburetted water gas," "generator gas," and so on, and is much in the same position as a brewer or an iron founder would be, if confined to terms such as "fluid" and "metal." Perhaps it is too late in the day to suggest that the term "Murdoch gas" should be applied to ordinary or straight coal gas. But however opinions may differ on this point, there is no disputing the fact that the retort process still retains the main features introduced by the inventor, and that Murdoch's claim is more clear and decided than that of the originator of any other personally-named gas. With new gaseous products from coal to which this method of nomenclature has been applied, the article supplied by statutory gas companies is frequently at a disadvantage for want of a smart definite title. Shakespeare's hackneyed quotation does not apply to modern business conditions, in which great importance is attached to a name—not so necessarily of a suitable, as of a striking and suggestive character. Indeed, this is carried to extremes, as by the use of such ungrammatical abominations as "yusabit" or "ryteesi." Without, however, going to the ridiculous, it might be possible to arrive at short distinctive titles for retort coal gas and for generator, water, or oil gas.

There are two methods of distributing gas which dispense with gasholders. In the system of distributing at high pressures, as

practised in the natural gas territory in the United States, and to a slight extent elsewhere, the use of the holder is obviously impracticable. One feature of the Mond gas scheme, too, about which so much has been heard lately, is the use of an adjustable and continuous acting generator, whereby the make of gas is caused to synchronize with the demand. The exhauster or blower at the inlet of the generator, is controlled according to the pressure on the supply mains. Under the usual conditions of gas supply, with an unchecked distributing pressure not more than an inch or two in excess of that actually required for combustion, the storage capacity of the mains is not worth consideration. A complete failure throughout the district is a question of a very few minutes, after stopping the supply at the outlet from the works. But when, as is the case with natural gas, the distribution pressure is anything between 20 and 100 lbs. per square inch in excess of that actually required (the excess being reduced by means of a special appliance on each service), very different conditions prevail. The content of a mile run of 10-inch pipe may be anything between 2500 and 15,000 cubic feet, when measured at atmospheric pressure; and, given a fairly constant source, it is quite possible, by keeping an ample reserve or excess of pressure, to give the consumer a uniform supply, without other assistance in the matter of storage. This advantage. incidental to high-pressure distribution, has not failed to attract the attention of manufacturers of artificial gas, and may be expected to command increased consideration in future. For many reasons a pressure of from 10 to 15 inches would be more satisfactory than one of 20-10ths. The higher pressure gives better results with the Welsbach burner, which simply means that the atmospheric burner is more efficient because a more intimate mixture of gas and air is obtained—an advantage applying to all burners of that type.

The method by which the Mond Gas Company propose to steer clear of the ordinary distribution difficulties includes several novel points, which lead one to look with interest for the actual practical results, in connection with a number of consumers. It has for some time been in operation on the Mond works at Winnington; but supplying one's own requirements is a very different thing to guaranteeing to satisfy those over the whole of a county. The generator is so contrived that it can be fed with fuel, or the ash and clinker can be removed, without stopping the blast and the generation of gas. It is simply a question of adjusting the blast according to the pressure on the outlet-main from the works. This undoubtedly great advantage is, however, not obtained free of cost; and some of the conditions necessary are such as to render it inapplicable to the manufacture of a pure, good quality gas. The heat necessary for the gasification of the coal is supplied by the combustion of a part of the charge, and brought about by air containing 80 per cent. of inert materials. The products of combustion and this inert matter must necessarily go forward, mix with the product, and be sold to consumers —seeing that the removal of carbonic acid is costly, and that there is no known method of removing nitrogen. Dr. Mond is certainly entitled to the credit of the idea of selling chimney gases to the consumer at the current rate, whatever that may be, instead of allowing them to go to waste; and when one remembers the outcry raised in connection with coal gas from time to time, with respect to the air process and other matters that had led to the presence of perhaps 2 per cent. of diluent in the gas, it may be doubted whether the consumer will take kindly to the idea of paying for a 60 per cent. loading of carbonic acid and nitrogen.

Then Mond gas is in no sense a purified gas. The ammonia is absorbed by means of an acid solution—a process that has no effect in respect to the removal of other impurities, and therefore is not available to assist in the purification. The only purifying process besides the acid solution is washing with water. The whole of the volatile sulphur, including that usually taken up by liquor and tar, and also a considerable proportion of that which is retained by the coke, passes forward with the gas; and practically the whole of it is delivered to the consumer. Mond gas, therefore, would not be pure enough to admit of being used in ordinary living-rooms, as coal gas is. If any attempt was made to free it from sulphuretted hydrogen, as is done with coal gas, the variable rate of production would present practical difficulties; and a purification plant capable of dealing with the maximum production would be required. Taking the condensation alone—that is, the removal of all suspended matter—it is not easy to treat large and variable quantities of gas. But apart from these and other difficulties that may be expected to arise in practice, the continuous and adjustable generator is the only complete solution of the distribution problem; and, as such, it may be recommended to the careful study of all interested in the manufacture of gas at the present time.

The Cheapest Form of Light.—We learn from "Nature" that the paper by Professor S. P. Langley and Mr. F. W. Very, "On the Cheapest Form of Light," which appeared in the "American Journal of Science" in August, 1890, has been reprinted and published in the Smithsonian Miscellaneous Collections, with a note pointing out some of the additions to our knowledge of the light from living and mineral sources during the last ten years. It may be remembered that the paper deals with the light of the fire-fly, and shows that the insect produces light without heat, so that its efficiency as a light source is far higher than any artificial means of illumination.

TECHNICAL RECORD.

A RETORT-CHARGING MACHINE.

By A. Cabrier, of Moulins.

[Paper presented at the Annual Meeting of the Société Technique.]

Principle of the Machine.—A cylinder A, having four arms of the form shown in fig. 1, is made to revolve at a determined speed. A feeding arrangement by rollers and wide belting B, regularly throws on to the revolving cylinder coal from a skip C, at a speed proportioned to the motive power used. The coal is thus sent forward, and it only remains to direct the flow of it into the retort. This is attained by making the apparatus in the shape and proportion indicated by the accompanying diagram, which is a longitudinal section of the machine, showing its position in front of the retorts.

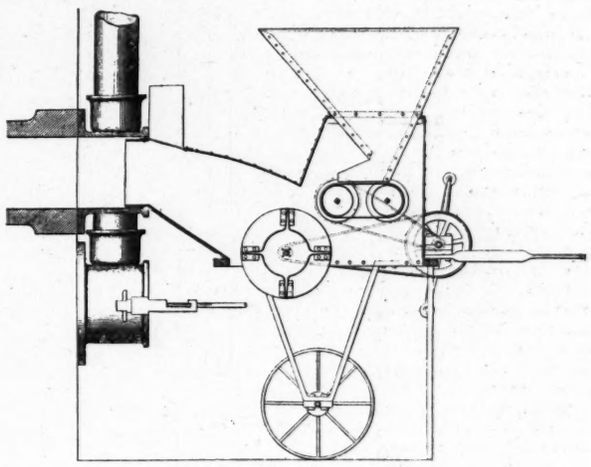
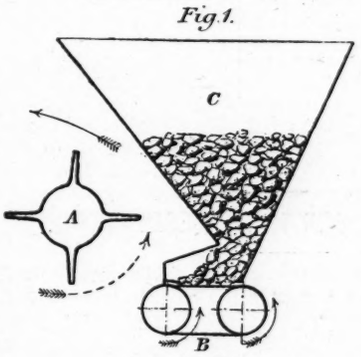


Fig. 1.



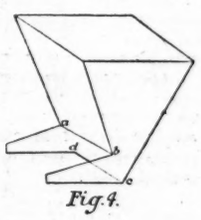


Fig. 4.

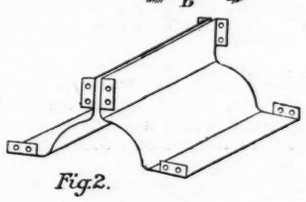


Fig. 2.

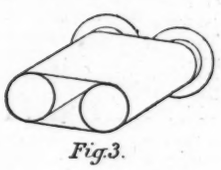


Fig. 3.

Description of the Machine.—The projector consists of four iron sheets (fig. 2), each curved in the same way, and having ears to allow of fastening them on to the base rings, through the centre of which the axle passes. The fastening of one to the other of these four sheets forms the cylinder and the projecting arms. The feeding of the coal is effected by a wide leather belt, which works at the bottom of the skip, and which shuts in the coal while being filled. This belt (fig. 3) turns on two sheet-iron rollers, and in moving carries the coal which is spread over it, and lays it evenly over the whole surface of the projector. As regards the coal-tank, it is a sheet-iron skip containing 200 kilos. (nearly 4 cwt.). The opening for the discharge of the coal follows the line *a b c d* of fig. 4. It is large enough to allow big pieces to pass, when coal in bulk is being used. All of these parts are arranged in a sheet-iron box, fixed on to a frame with wheels. In the front is the mouthpiece, which serves to direct the stream of coal into the retort. It has, at its upper part, a chimney allowing the escape of the flames and smoke, which fly back during the charge. At the back are the driving-shaft and the beam which guides the machine.

Motive Power Required.—The working of the coal-feeder is combined with that of the projector. The greater the speed given to the latter, the quicker does the coal-feeder work. It is therefore,

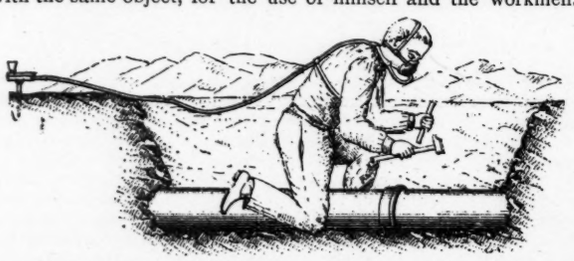
in some respect, this supplying of the coal which regulates the power of the throw, whatever may be the speed given to the projector. Good conditions for the throw are arrived at when the speed of the projector does not fall below 360 revolutions per minute. This result can be attained with only one man working the machine, who can make a charge of 175 to 200 kilos. (over 3 to nearly 4 cwt.) in a time varying from 50 to 60 seconds; but, as it is an advantage to expedite the charge, it is found better to work the machine with two men. In this case, the charge is made, without any fatigue to either of them, in from 35 to 45 seconds. For this reason, the driving-shaft placed at the back of the machine is provided with two handles. We have only experimented with manual power; but it would not be very complicated to adopt power supplied by a motor, as the speed of the machine does not need to be varied from the beginning to the end of the operation. The transmission from the driving-shaft to the projector and feeder is done by pinions and chains. This arrangement of transmission has the advantage, from the point of view of the construction of the machine, of leaving every freedom in choosing a place for the driving-shaft.

Method of Working.—The rotary apparatus just described is neither cumbersome nor weak. It weighs 230 kilos. (4½ cwt.)—that is, for the type applicable to the middle tier of retorts. It is supplied with coal before being brought into position in front of the retort. When the skip is full, two men are required to work and move it. It is placed so that the mouth of the machine goes into the retort mouthpiece for a distance of a few centimetres. This is not obligatory, however, though it helps to keep the apparatus in place; it also compels the flame and smoke to go out by the small chimney made for the purpose. The two men concerned with the working hold the back of the machine with one hand, and with the other turn the handle at a speed varying from 1¼ to 1½ revolutions per second. By keeping up this rate uniformly till the end of the operation, the layer of coal in the inside of the retort is very nearly of equal thickness throughout, but slightly greater in the middle. A stroke with a rake-rod speedily makes it level. The type of machine of which an illustration is given is for the middle tier of retorts. For the lower and higher tiers, there is nothing to be changed in the proportion and position of the three essential parts—projector, feeder, and coal-tank; the dimensions of the travelling frame and the position of the driving-shaft are all that require altering.

From the results obtained up to the present with our experimental apparatus, we may consider the advantages of the system of charging which we have brought before you to-day to be: First, the speed in making the charge; and, secondly, the possibility of effecting the operation of charging retorts with any kind of men, even untrained, and this without much fatigue on their part, as the machine shields them from the heat during the charge. It is commonly said that it is the throw of the shovel which makes the stoker. To seek to do away with this throw of the shovel is, therefore, to endeavour to render less difficult the recruiting of this workman, and to try to reduce to proper proportions our unreasonableness and his pretensions.

AN IMPROVED SERMENT RESPIRATOR.

At the recent Meeting of the Société Technique, M. Paul Bachelay, of Toulon, read a short paper on the above subject. He reminded the members that at the third meeting of the Society, in 1876, M. Serment, who was then Engineer of the Marseilles Gas-Works, described a very ingenious little apparatus which "enabled the wearer to 'penetrate'—these were the words of the communication—into a place filled with gas unfit for respiration." M. Denayrouze also called attention to a similar appliance; and M. Bachelay himself, when carrying out works for the Paris Gas Company, manufactured a primitive device with the same object, for the use of himself and the workmen.



The subject was therefore by no means new. However, having by chance heard, some time ago, a remark made to a colleague and friend, that when remedying a great leakage on a public road an inspector inquired whether the works were provided with respirators to protect the lives of men who had to breathe a dangerous atmosphere, he recalled to mind the various devices, and thought there was good reason for making them more practical, especially at a time when water gas seemed likely to find its way into use.

The Serment respirator had, in his opinion, three drawbacks: (1) The workman had to put the end of a tube in his mouth; (2) the part of the tube between the mouth and the valve-box being utilized alternately for inhalation and exhalation, it followed that the workman drew in at each breath some of the air previously expired; and (3) inspiration and expiration could only be carried on through the mouth, which was fatiguing, and the nose had to be closed with a clip, which was inconvenient.

M. Bachelay said he thought he had remedied these defects by wearing a half-mask on the lower part of the face, so as to be able to breathe through nose and mouth; the expiration-valve being applied directly to this half-mask, and the inspiration-pipe left for its special purpose. The appliance is shown in use in the accompanying illustration. The box containing the inspiration-valve is placed at the end of the india-rubber tube, and is secured by an iron pin on the edge of a trench. It is provided with an antechamber filled with boricated cotton to retain the dust which is always more abundant near the ground and newly dug earth like that by the side of a trench. The half-mask is made of aluminium, which renders it very light. The joint on the face is assured by an india-rubber pad containing an air cushion, which softens contact, and allows a relative tightening of the strap which fastens it. Finally, the comparatively slight thickness of the metal enables the workman to make himself heard by his assistant on the edge of the trench.

BLUE SULPHATE OF AMMONIA.

In the *Revue de Physique et de Chimie* for July, M. Leriche has an interesting note on the blue coloration frequently observed in sulphate of ammonia made by distilling gas liquor into sulphuric acid. He attributes the colour to prussian blue in minute quantity, and explains its formation as follows: Ammonium ferrocyanide—which, with other ammonium salts, such as sulphide and ferrocyanide, is present in the raw liquor—splits up on distillation into ammonium cyanide and ferrous cyanide—

$$Am_4\ Fe\ (CN)_6 = 4\ Am\ CN + Fe\ (CN)_2.$$

Ferrous cyanide is insoluble in water. It is found in the spent liquor, where it produces a milky appearance similar to that of milk of sulphur. The ammonium cyanide passes with the other vapours into the condenser. Here two things may happen. If the sulphuric acid comes up to a certain strength, the ammonium cyanide will be decomposed, forming ammonium sulphate and hydrocyanic (prussic) acid, which will be given off from the liquid. If, however, the liquid is only very slightly acid, precipitation of ferric oxide and ferrous oxide will take place as soon as it approaches boiling-point (the ferrous oxide is present in consequence of the reducing action of the sulphuretted hydrogen liberated from the ammonium sulphide). In these two oxides of iron, the ammonium cyanide finds the bodies necessary to combine with it to form prussian blue; the remaining condition being a further slight addition of acid. So long, therefore, as the bath is not sufficiently acid, the action of the ammonium sulphide vapours will have the effect just mentioned. A further addition of acid, however, will give, not the blue precipitate of prussian blue, but a white precipitate similar to that yielded by potassium ferrocyanide and a ferrous salt.

This chain of reactions will be repeated a certain number of times according to the mode of manufacture. Freshly prepared sulphate will present nothing special in appearance; but it will gradually become blue on exposure to the air, and this change will proceed with greater rapidity the more ferrocyanide the sample contains. This fact explains the peculiar inconstancy with which this "blueing" makes itself visible. The following experiment will illustrate what takes place: Distil a solution of ammonium hydrate containing a little ammonium ferrocyanide with a very weak solution of sulphuric acid to which traces of ferric and ferrous sulphate have been added. So long as the solution remains acid, the salt will be perfectly white. If, however, between each addition of acid, the liquid is allowed to get alkaline, the salt is blue.

REGISTER OF PATENTS.

Anti-Vibratory Fittings for Incandescent Gas-Burners.—Clay, W. R., of Farnworth, and Ennis, C. F., of Clapham, S.W. No. 15,045; Aug. 23, 1900.

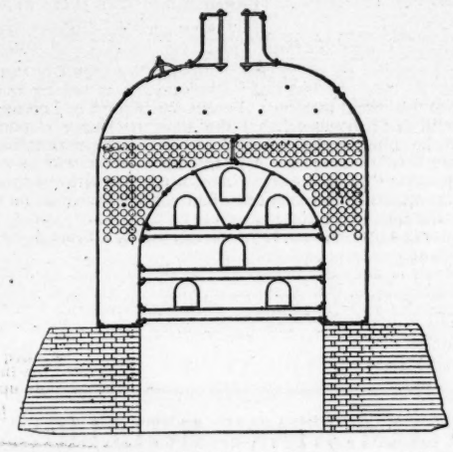
This invention relates to improvements in the anti-vibratory apparatus described in patents No. 17,679 of 1897 and No. 27,416 of 1898.

The proposal is to form the sliding ring described in the latter patent in two parts, in such manner that the outer edge of the ring is provided with a flange top and bottom, and with an intermediate annular recess; the top and bottom flanges being located above and below the neck of the resiliently supported upper part of the burner. In order to allow the ring freedom of movement in a horizontal direction, the annular recess is made somewhat deeper than the thickness of the neck; while movement of the ring in a vertical direction (except to a very small extent) is prevented as soon as the lower flange of the ring comes in contact with the lower surface of the neck, which thus acts as the means for stripping the ring off the bunsen tube, in case it should adhere to it.

Tubular Boiler for Gas-Retort Furnaces.—Collins, R., of Deptford. No. 12,578; July 12, 1900.

This inventor suggests covering the crown or top of a bed of gas

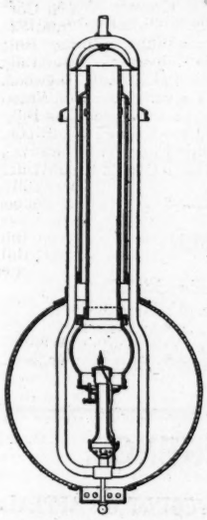
retorts or otherlike furnaces with a tubular boiler, as shown—employing a saddle-back shaped boiler with a hood or cover at the back riveted and bolted together. In this boiler he proposes to fix longitudinally 82 tubes (through which the heat travels from the furnace from front to back), and also an additional 82 tubes in tiers below the other tubes, for the purpose of causing the heat to travel from the furnace up the



vertical recess through the tubes from back to front, and through the tubes of the boiler into the flue of the chimney. The edges of the hood or cover are built in the back wall for the purpose of confining the heat from the retorts until it passes out by the flue. The bottom of the boiler is constructed with twelve water-tubes fixed inside the boiler transversely.

Incandescent Gas-Lamp.—Thompson, W. P.; a communication from S. Zielenziger, of Berlin. No. 23,222; Dec. 19, 1900.

This incandescent gas-lamp "for producing intense light of the kind obtained by the application of gas or air under pressure," is so constructed as to enable the combustion of an enlarged volume of gas and air, to be drawn into a burner-tube of enlarged size by the suctional force of an elongated chimney, in combination with a surrounding transparent or translucent body open at both ends, and a chimney drawing a current of air into the surrounding body.



To equal the light of an electric arc lamp by a gas-lamp provided with an incandescent mantle, has hitherto only been possible, says the patentee, by the aid of compressed gas or compressed air, the pressure of which, in issuing into the burner, is utilized to carry along by suction an increased volume of air or gas, and to effect the intimate mixture of the gas and air—thus producing "a flame without a blue or bluish-green heart or core, and of such a high temperature as to permeate the incandescent mantle, and to raise its heat to the highest degree." For working lamps of this kind, compressors were required, and power for working the compressors, also separate conducting pipes for the compressed fluids. But, according to this invention, the gas is supplied to the burner by the usual pipes, and the suctional force of the lamp-chimney is employed to draw into the burner atmospheric air enough to produce, without the supply of any (or a very insignificant quantity of) exterior air, a flame resembling the flame obtained by the use of compressed gas.

The effect obtained by the incandescent lamp of this invention is due to the possibility of subjecting to combustion under the most favourable conditions a large volume of gas which, supplied under the usual pressure existing in the gas-supply pipes, is mixed with a volume of atmospheric air increased in proportion. The burner-tube (as shown) has an area of free passage for gas and air of at least double the usual size (preferably above about 25 millimetres in diameter and 500 millimetres square sectional area); otherwise the increased suctional force of the elongated chimney would be considerably counteracted by fractional resistance, and the gas and air would not be able to mix as intimately as is required. This enlarged area of free passage through the burner-tube beyond the usual sizes must be attained without relatively increasing the size of the gas-jet; the object being to increase the proportion of air to gas so as to draw into the mixing-tube a mixture of gas and air having a higher percentage of air than is necessary for complete combustion (*i.e.*, more than 6 to 1), "the excess of air causing the flame to permeate the mantle like a forced-pressure gas-flame." Another essential feature of the invention consists in locating the burner or mantle within the portion of the chimney wider than the chimney proper. This widened space surrounding the flame has for its object to allow the flame to permeate the mantle, and in addition the widened part prevents the column of air in the chimney vibrating and producing objectionable noises.

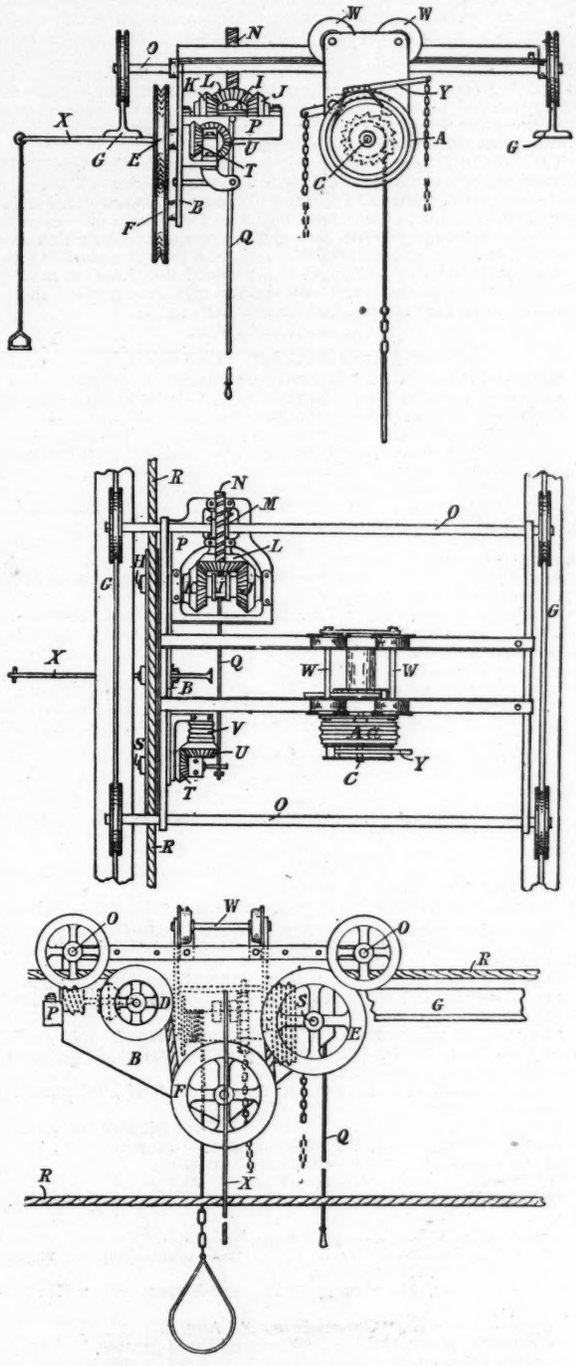
To utilize as much as possible the suctional force of the elongated chimney, the bottom of it nearly tightly fits to the burner-tube, so as to prevent the entrance of air otherwise than through the burner-tube. The admission of a slight amount of air outside the burner is not objectionable, as it helps to prevent any overheating of the burner.

The reciprocal dimensions between the width of the burner, the width of the portion of the chimney surrounding the burner, and the length of the chimney above the top of the burner, are not fixed, but depend on the quality of the gas and the pressure of the gas supply. In general, it may be stated that, as the width of the burner is increased, the length of chimney may be reduced.

Retort-Charging Apparatus.—Ingram, S. J., of Truro. No. 654; Jan. 10, 1901.

This invention relates to improvements in patent No. 14,438 of 1898, by means of which the retort-charging machine there described may be worked by power.

The patentee proposes to remove the chain-wheel and chain from the drum-shaft C, referred to in the 1898 patent; and in lieu thereof to affix to the shaft a serrated or other friction-wheel A of any suitable dimensions and section. A frame-plate B (as shown, or of



any other convenient form) is fixed to the front and, if necessary, side of the machine, to which are attached two, preferably rope driving, pullies D and E, and any required number of guide-pullies, one of which is shown at F. The driving-pulley is for the purpose of propelling the machine to and fro on the tram-rails G. It is fixed to the spindle or axle H, passing through the frame-plate B, to which suitable bearings are attached. On the other side of the frame-plate is fixed, on the axle H, a sliding clutch or cone I, working loosely on a midfeather on the spindle. At the ends of the clutch are two bevel-wheels J K, running loosely on the same shaft; and at right angles with these, and connecting them, is a third bevel-wheel L fixed on a separate shaft. On this shaft is fixed a worm M, which engages into

a tangent wheel N fixed on one of the travelling axles O of the machine. The whole of this gearing is carried by a bracket P of any convenient form, or (as shown in the drawings) else bolted to the frame-plate B. The sliding clutch I is actuated by a lever Q, fixed so as to be within convenient reach of the operator.

This set of gearing is worked as follows: The pulley D is driven by the rope R, which motion is transmitted through the spindle H to the friction-clutch I. When it is desired to propel the machine forward, the friction-clutch is pressed by means of the lever Q against the bevel-wheel K. This immediately revolves, and transmits its motion through the bevel-wheel L and worm M to the tangent wheel N, affixed to the travelling axle O; and the machine then travels forward until the clutch I is once more released by the lever Q. When the machine is required to travel in the reverse direction, the friction-clutch I is made to engage in the opposite bevel-wheel J; and the motion of the various parts is thus immediately reversed.

The driving-pulley E is for working the lifting gear, and, with this object, is fixed on the shaft or axle S passing through the frame-plate B. At the opposite end of the shaft is fixed a bevel-wheel T, which engages into another bevel-wheel U, working at right angles to itself on another shaft. Fixed on this shaft is also a serrated friction-wheel V, of the same section as the friction-wheel A, on the drum-shaft C, and so fixed that when the carriage W is drawn back into position for lifting, the friction-wheels V and A intimately engage each other—perfect contact being ensured by means of the actuating lever X. For lowering purposes, there is a band-brake Y.

To work the lifting gear, the pulley E is driven by the rope R; its motion being transmitted by the shaft S and bevel-wheels T U to the friction-wheel V. The lifting-carriage W is brought into position for lifting, when the actuating lever X (the end of which is preferably quadrant shaped) engages it, by one of its cross stays, by which it is pulled down. This causes the friction-wheel A to be brought into close contact with the friction-wheel V, which immediately revolves and lifts the load, which is then dealt with in the manner described in the specification of the manual charging machine of 1898.

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14,794.—Jacobs, B. J., "Gas and other engines." July 20.
14,806.—Dobbs, A. E., and Johnston, J., "Carburettors," July 20.
14,865.—Rulf, A., "Automatic gas-pumps." July 22.
14,879.—Melhuish, A. G., "Gas or oil engine." July 22.
14,883.—Bloxam, A. G., "Regenerative incandescent gas-burners." A communication from O. Mannesmann. July 22.
14,928.—Rowden, W. T., "Gas-engines." July 23.
14,957.—Evans, I. J., "Utilization of waste gas and air for heating purposes, where a gas or other engine is employed." July 23.
14,968.—Morgan, D., "Compressing, exhausting, and regulating the pressure of gas." July 23.
14,976-7.—Naef, P., "Treatment of solid material with gas, as in the carrying out of catalytical reactions." July 23.
15,005.—Johnson, J. Y., "Charging and discharging coke-ovens or retorts." A communication from the Wellman Seaver Engineering Company. July 23.
15,006.—Johnson, J. Y., "Loading cars with coke." A communication from the Wellman Seaver Engineering Company. July 23.
15,011.—Haddan, R., "Igniters for gas-lamps." A communication from the Deutsche Gastechnische Gesellschaft mit beschränkter Haftung. July 23.
15,072.—Guldlin, O. N., "Gas-washers." July 24.
15,139.—Walker, M. S., "Bunsen gas-burners." July 25.
15,185.—Ehmann, C. P., "Incandescent gas-burners." July 26.
15,188.—Bonjour, P., "Mantles for incandescent lighting." July 26.
15,208.—Letombe, L. A., "Gas-engines." July 26.
15,259.—Beck, N., and Dior, R., "Lighting and heating by carburetted air." July 27.
15,351.—Hoffmann, P. C. F., "Regenerative gas-lamps." July 29.
15,397.—Herring, W. R., "Retort-settings." July 30.
15,468.—Wilton, G., "Treatment of sulphuretted hydrogen." July 30.
15,476.—Stoltenhoff, H., "Incandescent burners." July 30.
15,489.—Speakman, W., "Non-explosive incandescent gas-burner." July 31.
15,537.—Meydenbauer, A., "Acetylene apparatus." July 31.
15,595.—Thwaite, B. H., "Treatment of blast-furnace gases, and the utilization of their heat." Aug. 1.
15,597.—Beasley, A. H., sen., A. H., jun., & V. W., "Gas-making apparatus." Aug. 1.
15,606.—Warren, W. P., "Generation of acetylene." Aug. 1.
15,630.—Scott-Snell, C., "Gas-burners." Aug. 2.
15,645.—Crisp, F., "Gas-fittings." Aug. 2.
15,646.—Duff, E. J., "Gas-producers." Aug. 2.
15,660.—Westinghouse, G., "Internal combustion engines." Aug. 2.
15,667.—Mond, L., "Gas-producers." Aug. 2.
15,701.—Overbeck, O. G. C. L. J., "Self-cleaning, gas or vapour scouring, and conveying brushes." Aug. 3.
15,730.—Blake, M., Smart, R. H., and Ewing, W., "Hot-coke conveyors." Aug. 3.
15,750.—Mond, L., "Gas-producers." Aug. 3.
15,760.—Machlet, G., jun., "Carburetting apparatus." Aug. 3.
15,765.—Fahndrich, W. H. W., "Stopcock for gas-brackets and the like." Aug. 3.

The Public Lighting of Durham.—At the meeting of the Durham Corporation last Wednesday, the Lighting Committee reported the receipt of a letter from the Gas Company announcing a reduction in the price of gas to the Council by 3d. per 1000 cubic feet; making the rate for public lighting 2s. 7½d. The Gas Company further offered to light the city at £3 os. 9d. per lamp per annum, and to replace the present lamps at the rate of 50 each year with incandescent burners without additional charge. The Council adopted the scheme.

CORRESPONDENCE.

[*We are not responsible for opinions expressed by correspondents.*]

The Proposed Outside Representation on the Chartered Board.

Sir,—I should regret very much if it went forth to the profession that I suggested the desirability of every Local Authority in the Metropolitan area having statutory powers to send Nominee Directors to the Board of the Gaslight and Coke Company, as stated by one of the speakers at the recent meeting. Permit me to say I had no such intention. I still think, however, that the London County Council might represent the minor bodies by sending two such representatives to the Horseferry Road directorate. I know of no better way of removing "misconception" than that of talking matters over with opponents; and the present mode of procedure being faulty, no harm would be done by adopting the Sheffield system of (when raising capital) taking the consumers into confidence. And the change should come from *within*, gracefully, and without external pressure.

One thing is demonstrated—*i.e.*, the sliding-scale, as a means of cheapening coal gas, is a huge failure, and indicates a return to truer trade principles and the forsaking of fantastic methods for increasing shareholders' dividends. The gas industry was not built up by the latter method.

Leyton, Aug. 9, 1901. C. E. Jones.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF LORDS.

The following further progress has been made with Bills:—

Bills reported, with amendments: Devonport Corporation (Gas) Bill, Wallasey Improvement Bill.

Bills read the third time and passed: Derby Corporation Bill, Wallasey Improvement Bill.

Bills Royal Assented: Arlesey Gas Bill, Barrow-in-Furness Corporation Bill, Biggleswade Water Board Bill, Blackburn Corporation Bill, Bradford Corporation Bill, Broadstairs and St. Peter's Water and Improvement Bill, Cromer Water Bill, Dover Corporation Bill, Elland Gas Bill, Golborne Gas Bill, Harpenden District Gas Bill, Harrogate Water Bill, Heywood and Middleton Water Board Bill, Kirkcaldy and Dysart Water Order Confirmation Bill, Long Eaton Gas Bill, Mond Gas Bill, Newport (Isle of Wight) Gas Bill, Rhyl Improvement Bill, Ripon Corporation Bill, Salford Corporation Bill, Shipley Improvement Bill, Smethwick Corporation Bill, South Essex Water Bill, South Metropolitan Gas Bill, Southport Water (Transfer) Bill, Stockport Corporation Water Bill, Wells Corporation Water Bill.

HOUSE OF COMMONS.

The following further progress has been made with Bills:—

Lords Bills read the third time and passed: Harpenden District Gas Bill, Leeds Corporation (General Powers) Bill, Leeds Corporation Water Bill, Ripon Corporation Bill, Southport Water (Transfer) Bill, Stratton and Bude Improvement Bill, Weston-super-Mare Gas Bill.

LEGAL INTELLIGENCE.

SUPREME COURT OF JUDICATURE—COURT OF APPEAL.

Monday, Aug. 5.

(*Before Lords Justices* Vaughan Williams *and* Stirling.)

Welsbach Incandescent Gas-Light Company v. Intensified Gas-Light Company.

This was an appeal by the defendant Company against an order made by Mr. Justice Lawrance in chambers, on July 25, granting an interlocutory injunction restraining the defendants from selling mantles made by the United Chemical Company.

Mr. Astbury, K.C., and Mr. Neill appeared for the appellants; Mr. Bousfield, K.C., and Mr. Walter for the respondents.

Mr. Astbury said this order had been made under very exceptional circumstances. Last November, in that Court, an appeal came on against an order by Mr. Justice Day granting an injunction in an action brought by the Welsbach Company against the United Chemical Company. The matter originally came before Mr. Justice Farwell; and he refused to make an interlocutory order. The plaintiffs then discontinued the action, and paid the costs, and afterwards issued a writ on the common law side, went before Mr. Justice Day in chambers, and obtained from him the injunction which Mr. Justice Farwell had refused to make. This matter came before the Court of Appeal, who discharged the injunction, and made some strong remarks about the plaintiff Company. The present action was brought against the customers of the United Chemical Company; and the injunction restrained the defendants from using the mantles which the Court of Appeal expressly declined to prevent the United Chemical Company from selling. The principal patent of the Welsbach Company was that of 1885; but the

one of most importance in this case was the 1886 patent, which expired on March 13, 1900. In 1893, the Welsbach people took out another patent, which was the one they were now suing on. This patent was amended in July, 1899; but it was simply and solely a patent for trying to extend the monopoly which they secured by the 1886 patent, notwithstanding its lapse. It claimed distinctly over again one of the prescriptions in the 1886 patent—namely, "a hood for an incandescent burner consisting of pure oxide of thorium, with a small proportion of the oxide of one of the rare metals herein mentioned." One of the metals mentioned was cerium; and the suggestion was to make a mantle of thorium with 1 to 2 per cent. of cerium. Now thorium, as known in 1886, contained a certain percentage of cerium, which was a metal absolutely unknown, except theoretically; and Mr. Justice Buckley decided, in a case reported in 1900 on the 1886 patent, that the prescription for thorium meant thorium as then known in the market, which was thorium with a small percentage of cerium. So that the so-called pure thorium of 1886 was a thorium which chemists of to-day would call impure. Now it was decided in *Patterson v. The Gaslight and Coke Company** that a patentee could not prevent others using what they had used before, although they did not know its exact composition; and this exactly applied to the present case. The patent of 1886 was for the use of pure thorium; but it now appeared that the so-called pure thorium had a slight admixture of cerium in it, and the plaintiffs were seeking, by the patent of 1893, to prevent persons using the 1886 patent which had expired. The United Chemical Company had built up a large business (as they were entitled to do), in making mantles in accordance with the 1886 patent. The plaintiffs brought the action before Mr. Justice Farwell, and tried to stop them under the patent of 1893; and an injunction having been obtained from Mr. Justice Day, the matter came before that Court, when the injunction was almost indignantly dissolved. The plaintiffs had now started issuing writs against the customers of the United Chemical Company, and boasted that they had obtained some 800 interlocutory injunctions on the 1893 patent. This seemed almost a scandal, for that patent had never been really established after a contest before a Court of Law. It had never been brought to a final judgment, except in one case against a hawker with a barrow, who they knew could not fight it; but a defence was put in by him, and the plaintiffs secured a certificate that the validity of the patent had come in question, though the learned Judge who gave it said it was extremely unsatisfactory. There had never been a final decision in open Court upon the 1893 patent. It came in question between the plaintiffs and the Sunlight Company, who, unfortunately for the plaintiffs, had sufficient means to contest the action, and did contest it; and the result was that the Welsbach Company, immediately before judgment was delivered, bought up the Sunlight Company for £110,000, in order that the judgment should not be given. The 1893 patent was now the only one the plaintiff Company had. The defendants had some patents for a form of burner on which an incandescent mantle had to be used; and in May, 1899 (the 1886 patent being still in force), they applied to the plaintiff Company for mantles. The plaintiffs refused to sell, except on condition that the defendants paid a royalty on their own patent burners. He supposed that this was a sort of legitimate blackmail. They at first insisted on a royalty of 1s. 6d. on each burner; and on May 10, 1899, an agreement was entered into by which the defendants were licensed to use the mantles on paying this royalty of 1s. 6d. per burner. Subsequently the defendants found it impossible to pay this price; and it was reduced to 9d. They afterwards discovered that even this was too much; and on March 23 last, they wrote to the plaintiffs giving notice to terminate the licence in six months, and also that they reserved the right to sell and use their burners with other mantles than the plaintiffs'. On March 26, the plaintiffs wrote back acknowledging the receipt of the notice, and giving a counter notice to terminate the licence forthwith, in accordance with clause 14 of the agreement; and they immediately sent notice to all their agents telling them that the agreement with the defendant Company had terminated, and directing them not to supply the defendants with goods. They, however, took no proceedings until May 15, when someone on their behalf purchased from the defendants twelve mantles which they afterwards sent to be analyzed; and on June 12 the writ was issued—nearly three months after the plaintiffs knew that the defendants were claiming to use mantles other than those manufactured by the plaintiffs. It was perfectly clear, also, on the analysis that the mantles were made in accordance with the 1886 patent. Mr. Ballantyne, in his affidavit, stated that he found the mantles consisted of 99·1 per cent. of thorium, and 0·8 per cent. of cerium, which was clearly within the 1886 prescription. The learned Counsel then cited a passage from the judgment of Lord Justice Stirling in the United Chemical Company's action last year, in which he said there was clearly a case to be tried, and that the delay on plaintiffs' part disentitled them to an interlocutory injunction. He submitted that the same reasoning applied in the present instance. He then read passages from the voluminous affidavits which had been filed, showing that the plaintiffs had commenced innumerable actions, but had not brought any one to trial; that the action against the United Chemical Company was still pending, having been delayed by the refusal of the Directors of the plaintiff Company to give discovery as to what had been done by them, or had come to their knowledge when acting as Directors of the Company which preceded the present plaintiffs, which had necessitated obtaining evidence from abroad; and that the 1893 patent had been refused in Germany and revoked in Austria, on the ground that it was included in the 1886 patent. There was a statement in one of the plaintiffs' affidavits to the effect that they were willing to supply the defendants with their mantles on the ordinary terms; but this seemed rather extraordinary, in face of the fact that they had instructed their agents not to supply them. It appeared to him that the injunction, in the form in which it was drawn, would prevent the defendants using such mantles, even if they could get them.

Mr. BOUSFIELD remarked that this was a matter which could easily be put right.

Mr. ASTBURY said he could only deal with the injunction as it stood; and he should submit that it ought to be set aside altogether. He cited, to support his contention, *Jackson v. Neal*, *Plimpton v. Malcolmson*, *The North British Rubber Company v. Gormully and Jeffery* (in which the infringement was admitted, and yet an interlocutory injunction was refused), and *Dunlop Pneumatic Tyre Company v. Stone and Corser*. He pointed out how serious a matter it was to put a stop to a growing business, and that the undertaking in damages of the plaintiff Company might not be sufficient to meet the loss the defendants would have sustained if they succeeded at the trial; while they were quite willing to keep an account, and were perfectly able to pay any damages which the plaintiffs could prove, should they be successful.

The learned Counsel was about concluding his argument, when his attention was drawn by his junior to a clause in the agreement, which he said had escaped his attention, as it had not been referred to in the proceedings before the learned Judge in chambers. It was to the effect that the licencees (the defendants) would not, during the continuance of the licence or after its termination, raise any objection to, or contest, the validity of any of the patents belonging to the Welsbach Company. This, of course, raised a very serious question.

Lord Justice VAUGHAN WILLIAMS said he understood it was admitted that, if the plaintiffs' patent was valid, the mantles complained of were an infringement.

Mr. ASTBURY said he did not see how the defendants could be prevented from using mantles made under the 1886 patent. It occurred to him that questions would arise as to the knowledge of the respective parties at the time the agreement was entered into; and it was quite possible there might be a case for rectifying the agreement, so as to leave the defendants at liberty to contest the validity of the 1893 patent. But apart from this, there would still be the question of infringement. This was put in issue by the defendants; and it was quite open to argument that the 1893 patent was valid, but upon a construction of the specification which would make it free from anticipation by the 1886 patent—viz., that it was a patent for using thorium with from 1 to 2 per cent. of cerium, as described. In this case, the mantles in question would not infringe, as they contained less than 1 per cent. of cerium. He also relied on the delay which had taken place, as disentitling the plaintiffs to an interlocutory injunction.

Mr. NEILL followed with an argument addressed mainly to the question of the balance of convenience; pointing out that the defendants were just building up a business in the sale of their patent burners, which would be entirely ruined if they were prevented from supplying the mantles with which alone they could be used. With regard to the statement contained in one of the affidavits of the plaintiffs, that they were willing to supply the defendants with mantles on the usual trade terms, nothing was said about the royalty on the burners. If this were given up, it would be a different thing, because it did not matter to the defendants whether they bought the plaintiffs' mantles or any others. The injunction prevented the defendants from using the plaintiffs' mantles on their own burners.

Lord Justice VAUGHAN WILLIAMS said it would be as well to ascertain what the offer of the plaintiffs really meant.

Mr. BOUSFIELD said the plaintiffs would stand by the statement in the affidavit.

Lord Justice VAUGHAN WILLIAMS said he did not quite understand the statement. He should like to know this—and he hoped the plaintiffs would seriously consider before answering, because, speaking for himself, if the reply were not satisfactory, it would have a very material bearing on the question whether the injunction ought to stand: What construction did the plaintiffs mean to put upon a somewhat vaguely drawn statement? Were they willing to supply the defendants with their patent mantles on the usual trade terms, wholly irrespective of any commission on the defendants' burners?

Mr. BOUSFIELD (after consulting his clients) said they would do so until the trial of the action.

Lord Justice VAUGHAN WILLIAMS said in that case the appeal was at an end. There would be no occasion to dissolve the injunction.

Mr. NEILL said there was only one point, which he was afraid their Lordships could not deal with. As was stated in the plaintiffs' affidavits, this was a typical case, and there were hundreds of others. The plaintiffs had brought actions (as, of course, they were entitled to do) against hundreds of customers of the United Chemical Company, and these were all standing over until the trial of this action. There was one against the Bolton Corporation, which came before the learned Judge in chambers on the previous Wednesday, on an application for an injunction, which stood over to see the result of this appeal.

Lord Justice VAUGHAN WILLIAMS said they could not consider any of the other actions. The learned Judge to whom any application was made would deal with it. The injunction in this case would remain, subject to the undertaking by the plaintiffs to supply the defendants with all the mantles they required to be sold in connection with the defendants' burners.

HIGH COURT OF JUSTICE—CHANCERY DIVISION.

Monday, Aug. 5.

(*Before Mr. Justice* BUCKLEY.)

Barnard Castle Urban District Council v. Wilson and Others—Supply of Water to a Swimming-Bath.

In this case, the question was whether water used for a swimming-bath was supplied for trade or domestic purposes. The plaintiffs were the Urban Sanitary Authority for the district of Barnard Castle, in the county of Durham, and the defendants three of the Governors of the North-Eastern Counties School. Plaintiffs supplied the district with water for public and private purposes, and, under section 56 of the Public Health Act, 1875, they were empowered to furnish water to any premises, and to charge in respect of such supply a water-rate assessed on the annual value of the property, or to enter into an agreement. Previously to 1896, the Council supplied water to the school for domestic, and also for other than domestic, purposes—viz., the cricket-ground, steam-boiler, hospital, &c. In February, 1896, the Governors informed the plaintiffs that it was their intention to erect a swimming-bath on the school premises; and the plaintiffs agreed to supply water

* See "JOURNAL," Vol. XXVII., p. 761.

at the rate of 3d. per 1000 gallons. The bath had a capacity of 37,000 gallons. In February, 1899, the plaintiffs increased the charge to 6d., which the Governors refused to pay. Plaintiffs claimed a declaration that the defendants were not entitled to demand and receive a supply of water for the bath as for domestic purposes within the meaning of the Water-Works Clauses Acts, 1847 and 1863, as incorporated by the Public Health Act, 1875, and that they (the plaintiffs) were entitled to the payment for water supplied to the bath from March 31, 1899, at the rate of 6d. per 1000 gallons, and were authorized to stop the water from flowing into the defendants' premises by cutting off the pipes thereto. The defence was that the school was a charity administered in accordance with the provisions of a scheme under the Charity Commission and Endowed Schools Act, 1869, in pursuance of which the Governors had provided a school suitable for educating 350 boys. They denied that they carried on the education of boys as a trade or business, or that the water furnished was supplied for trade purposes. They alleged that, as inhabitants and ratepayers, they were entitled to water for a swimming-bath on terms upon which it was supplied for domestic purposes.

Mr. S. T. LUSHINGTON appeared on behalf of the plaintiffs; Mr. R. CUNNINGHAM GLEN represented the defendants.

Justice BUCKLEY, in giving judgment, said the whole question was whether the supply of water to a bath was a supply for domestic purposes within the meaning of the Act, or a supply for the purpose of trade, manufacture, or business. The undertaking of a school to teach 350 boys was, within authorities, a "business." Lord Ellenborough, in *Doe v. King*, held that an assignment of a lease to a schoolmaster, who carried on the school in the house, was a breach of covenant not to permit or to be used or exercised on the demised premises any trade or business whatsoever without the licence of the lessor. In *Rolls v. Miller*, the Court of Appeal held that a charitable institution, called the Home for Working Girls, where the inmates were provided with board and lodging, whether payment was taken or not, was a "business." The present case was not varied by the fact that the school was not carried on for profit; for certain purposes, he thought that it was a "business." But what he had to decide was whether, within section 12 of the Water-Works Clauses Act, 1863, the supply was for domestic purposes or not. There was no provision in the Act about baths, except one relating to public baths. In that state of things, Counsel for the plaintiffs, did not contest that, in the first place, the supply of water to a bath in a private residence would be included within the supply for "domestic purposes." If a private resident had a desire to construct, and did construct, a swimming bath, that would be a supply for "domestic purposes." But it was said that this case differed, in the fact that the school was a "business," and that the supply of water to the bath was a supply for that business. The business was that of teaching, feeding, and housing the boys during the school term; and if the proposition advanced by the plaintiffs was true, it followed that the supply of water for the use of the boys, whether for washing their hands or for other purposes, would be a supply for the purpose of the business. The boys were all there consuming water, and if the business consisted of having the boys there, all the supply of water for the premises would be a supply of water for the business. This seemed to be a very extravagant proposition; and he asked himself if that was so. It was said that he ought to draw a distinction between water supplied for domestic purposes and water supplied for a swimming-bath. He failed to find that the bath was a "business," as distinguished from the general business of receiving the boys for the purpose of education. The true answer to the plaintiffs' contention was to be found in this—that in section 12 of the Water-Works Clauses Act, 1863, the word "business" had to be read as contrasted with "domestic purposes;" and directly it was found that the purpose was a domestic one, then, even if the keeping of a school was a "business," the supply was not for the business, but for domestic purposes. The plaintiffs having failed, the action would be dismissed, with costs.

NORTHAMPTON QUARTER SESSIONS.

Wednesday, July 31.

(*Before Mr.* E. P. MONCKTON, *Recorder.*)

Northampton Gas Company v. The Assessment Committee of the Northampton Union.

This was an appeal by the Northampton Gas Company against the assessment of their works and mains in the parish of All Saints, Northampton. The hearing occupied about five hours.

Mr. E. BOYLE, K.C., and Mr. C. LACEY SMITH appeared for the appellants; Mr. HORACE AVORY, K.C., Mr. A. M. WHITE, and Mr. B. CAMPION represented the respondents.

Mr. BOYLE, in stating the case, remarked that what the Court had to deal with had reference to the parish of All Saints, wherein three-fifths of the works of the Company were situated. The appeal was against the rate made by the Assessment Committee on Oct. 3, 1900. The old assessment was £2060 gross value and £1860 rateable value; while the new assessment was £6878 gross, and £4732 rateable. What the Company now contended was that the gross value should be £4242, and the rateable value £2908. Under the Company's Special Act they were restricted in the price they could charge for gas in the borough to 5s. per 1000 cubic feet, and outside the borough to 6s. By the subsequent Acts of 1871 and 1887, they had the right to raise fresh capital; and the whole of the capital raised under all the Acts was limited as regarded the interest that could be paid—some was paid 4 per cent., some 7 per cent., and other capital 7½ per cent., and so on. In addition to the capital thus raised, they had also issued mortgage debentures to the amount of £26,250. The total paid-up capital, exclusive of the latter amount, was £146,599. After the new valuation lists had been made out, and this appeal had been commenced, 580 extra shares of £20 had been issued, making a total of £11,600 to be added to the capital; but they were not dealing with this amount. Section 30 of the Gas-Works Clauses Act of 1847 laid it down that there should be no dividend paid beyond the prescribed rate. Section 31 stated that if more money was earned than the prescribed rate of dividend, then it was to go to the reserve fund. By sections 34 and 35, it was laid down that, if the profits exceeded the fixed rate of dividend, then there should be a reduction in the price of gas; so that under no circumstances could more than the dividend prescribed be paid. The total amount of dividend that could be paid upon the whole of the shares beyond the debentures and borrowed capital on June 30, 1900, was £11,512—that was the maximum amount that could be paid in the shape of dividend. If more was earned, it had to go to the reserve fund, or in the reduction of the price of gas. For his case, Counsel was not concerned with the earnings of the Company, but only with what could be divided. Therefore, he said a tenant coming to take the property must know that the most money he could get or earn to put in his pocket was £11,512, out of which he had to pay himself his remuneration as tenant, and also to provide for his landlord, and to apportion the rest as between the different parishes in proportion to the gross receipts. Counsel quoted cases in support of his latter argument.

Mr. AVORY said he agreed to the proposition as to the restriction which had been imposed upon the profit earning. He, however, argued that, if once profits were made, the ultimate destination of them was immaterial, and the occupier was rateable for the full value, even though he might be bound to hand over the profits to his landlord or any other party.

Mr. *John Eunson*, Chief Engineer and Manager to the Company, stated that he had occupied that position since 1854. About three-fifths of the Company's works were in All Saints and the rest in Hardingstone. The capital expended in All Saints' parish was £63,562, and in Hardingstone £49,600—a total of £113,162.

By Mr. AVORY: On Feb. 9 last year, he had an interview with Mr. Faraday, the valuer for the Assessment Committee, and he might have stated that up to that period they had expended a larger sum than the actual subscribed capital; the expenditure being £202,877. This, however, included meters, stoves, &c., and was not all expended in the works. The total amount of subscribed capital up to that date was £146,599. There was, however, the mortgage money—£26,000—which was capital. The Company had not spent a penny beyond their subscribed capital, the mortgage capital on bonds, and the premiums on shares. He did not recollect meeting Mr. Faraday on Feb. 12. At the interview previously referred to, they discussed figures in a friendly way, with a view to ascertaining each other's opinions, but not with the idea of coming to an agreement, because he was not empowered to do so. He did not at that interview agree with Mr. Faraday as to the £4732 being the rateable value in the parish of All Saints, nor did he agree that £100,000 was the value of the manufacturing premises in that parish. They talked about all sorts of figures in a conversational manner, but did not come to any agreement.

By Mr. BOYLE: There was not a word of truth in the suggestion that he assented to any figures with Mr. Faraday.

Mr. AVORY submitted that the figures the Company were now appealing against were the result of a compromise between Mr. Eunson and Mr. Faraday.

Witness reiterated that it was not true he made any compromise with Mr. Faraday. There was no attempt at such a thing.

Mr. *C. H. Batten*, Chief Clerk to the Company, said the maximum they could return to shareholders on June 30, 1900, was £11,512. He was at the interview with Mr. Eunson and Mr. Faraday; and Mr. Eunson did not assent to any figures. It was no more than a friendly conversation.

By Mr. AVORY: The old rating of the Company had existed certainly for some ten or eleven years; but there might have been slight alterations in certain parishes. In the year ending June, 1898, £13,216 profit was made by the Company, and dividends to the full amount were paid upon all the stocks. In that year there was a balance on revenue account of £10,620. In the year ending June 30, 1899, the profits amounted to £13,882. The balance on the revenue account was £11,480, as against £10,620 in the previous year. In June, 1900, there was a balance to the credit of profit and loss account of £16,045—an increase of above £200; and the revenue account for that year showed a balance of £13,255. Witness was further examined as to the amounts transferred to the reserve fund year by year, and said he was aware they were limited as to the reserve fund to one-tenth of the nominal capital, which in 1898 was £205,000. The limit had not been reached, as the fund only amounted to £14,578. He was also closely questioned as to the way the profits had been dealt with. The receipts from gas in All Saints' parish in 1898 were £8942, in 1899 £9165, and in 1900 £9486. Additional questions were also asked as to the receipts from the meters, stoves, &c., with the view of showing how much profit was really made.

Mr. BOYLE remarked that the figures given as to the profits were rather misleading, as when certain necessary deductions were made, they did not amount to so much.

Replying to Mr. BOYLE, witness said the profit in 1898, after deductions, was £10,000, instead of £13,216; in 1899, £11,480, instead of £13,882; and in 1900, £13,255, instead of £16,045.

Mr. BOYLE submitted that, whatever the results were, and whatever profit was made, the fact remained that the only profit which could be divided was the £11,512. He, however, disputed the point that profits had been improperly applied.

Mr. *R. W. Hedley* stated that he had made a valuation of the premises and undertaking of the Company, and he valued the tenants' share of the £11,512 at £4593. He estimated the gross value of the works, &c., in the parish of All Saints at £4242, and the rateable value at £2908.

By Mr. AVORY: The old rating in January, 1894, was too low; but since the old rating was made, the Company's business had considerably improved. His estimate was upon the amount divisible, and not taking into account what the actual receipts of the Company were.

By Mr. BOYLE: The general rule was that the rating was estimated, not by the earning power of a company, but by the amount that was divisible in dividends. It was no matter what amount was carried to a reserve fund, or what the earning power of the Company was.

Mr. *E. H. Stevenson* said he had examined the works; and he adopted the figures given by Mr. Hedley, though he thought the tenants'

share of the £11,512 should not be more than £4352. He agreed with Mr. Hedley's principle as to fixing the rateable value. Only in one year during the last four had the profit amounted to more than the sum divisible after the payments of dividends, &c.

Mr. AVORY said if the Court adopted the contention of Mr. Boyle that they were bound to stop with the amount of £11,512, which was divisible between the landlord and the tenant, then he took issue upon that as a matter of law. He submitted there was no law which compelled the Court to limit the earning power of the Company to £11,512 merely because it happened to be the amount which the statute laid down they might pay away as dividends in any one year. They must have regard to the statutory restrictions; but he submitted they must also have regard to everything the statute allowed them to do. It permitted them to put aside so much to the reserve fund, an amount as a sinking fund for the renewal of the whole of the plant, and the premiums they might receive on fresh capital. Considering all these circumstances, the Court had to ask itself what rent a tenant would pay to take these gas-works and work them under such conditions. He argued that the ultimate destination of the profits was immaterial in arriving at a decision, and that the occupier was liable to be rated for them.

Mr. *Faraday*, who valued the Northampton Union with the view to re-assessment of the whole of the property, said he had an interview with Mr. Eunson; and he was under the impression that he agreed with the £4732 as the rateable value, or assented to the sum. He had made his assessment on the principle of taking the whole of the profits and the expenditure—not only the £11,512, although he had taken the restrictions into consideration. He placed the rateable value of the whole concern at £9639; and this had to be apportioned between the Unions of Northampton and Hardingstone. The works and premises in All Saints' parish he now put at the rateable value of £4741.

By Mr. BOYLE: He took from Mr. Eunson the amount of £100,000 as the capital expended by the Company for works and mains in All Saints' parish; but if the figure was £63,562 (which, however, he did not agree with), this would certainly reduce the rateable value he had named.

Mr. *Herbert Fuller* stated that he had surveyed the works of the Company, and put the capital expended in All Saints' parish at £100,000. He agreed in the main with Mr. Faraday's figures, except that he (witness) made the rateable value £4815, against £4741. He had followed the general principle upon which gas companies were valued for rating. If he had taken the restriction as to the £11,512 into account, his rateable value would work out to about the same.

Mr. BOYLE here desired to recall Mr. Hedley to show that the works, &c., in All Saints' parish only cost £65,000, instead of £100,000, as valued by the other side.

Mr. AVORY objected to the point being re-opened.

The RECORDER thought he could do without it.

Mr. BOYLE, in summing up the case for the appellants, pointed out that the difference in Mr. Faraday's valuation of the premises, £100,000, and the £65,000 stated by Mr. Hedley, was £35,000. Four per cent. on this was £1400; and this deducted from Mr. Faraday's valuation, brought his rateable value down to Mr. Hedley's valuation—about £2900. He argued that both Mr. Faraday and Mr. Fuller had become, unwittingly, witnesses on behalf of the appellants. If the Court should be against him (but he did not think it would), he hoped an opportunity would be offered to test the point further.

The RECORDER said he would deliver judgment at the October Sessions.

[Mr. W. A. M'Intosh Valon was retained by the Assessment Committee to make a structural valuation of the Company's works. This he did; but he took no part in the appeal at the Sessions.]

Poole Gas-Works Assessment.

On Friday, the 2nd inst., the Poole Gas Company appealed against their assessment. Some time ago, Mr. W. A. M'Intosh Valon appeared before the Assessment Committee, and argued the Company's case, but without effect—they refused to meet the Company by reducing the assessment. The question therefore came before the Recorder at Poole last Friday. The expert witnesses retained for the Company were Mr. Valon and Mr. A. L. Ryde; while the Assessment Committee retained Messrs. Castle, Fuller, and C. E. Botley. The Counsel in the case were: For the Assessment Committee, Mr. Balfour Browne, K.C., and Mr. Salter; for the Company, Mr. Foote, K.C., and Mr. Knox. The Assessment Committee had raised the assessment from £1100 to £1900. The valuation of Mr. Valon was £935, and of Mr. A. L. Ryde £917; while Mr. Castle's valuation was £1912 and Mr. Fuller's £1932. Mr. Balfour Browne cross-examined Mr. Valon at considerable length, but failed to shake his valuation, or elicit anything of a character favourable to the Assessment Committee's assessment of £1900. After Mr. A. L. Ryde's evidence, Mr. Balfour Browne said that he had cross-examined Mr. Valon at such length that he did not propose to go further into the matter with Mr. Ryde, as the valuations appeared, on essential points, to give the same results. Mr. Balfour Browne then proceeded to examine his witnesses. Mr. Castle was cross-examined by Mr. Foote; and he acknowledged that his valuation was only £12 beyond the amount fixed by the Assessment Committee, and that, if his valuation were reduced by more than £12, it would fail to support the assessment of the Committee. This line of cross-examination was pursued with Mr. Fuller, who had also to acknowledge that, if his valuation was reduced more than £32, it would also fail to uphold the assessment of the Committee; and thus Mr. Foote argued that, taking the whole of the valuations of the expert witnesses, it was clear that those of the Company were more consistent than those of the Assessment Committee, which barely supported the amount of the assessment. The case was before the Court for six or seven hours. At its conclusion, an adjournment was made to the works, for the learned Recorder to inspect the premises. He intimated at the same time that he would give his decision in time for it to be confirmed at the September Sessions.

Claim for Damages for Wrongful Dismissal.

At the Birmingham Assizes last week, the case of *Cash v. The Eveson Coal and Coke Company, Limited*, was mentioned. It was an action in which damages were claimed by the plaintiff for wrongful dismissal. Mr. A. T. Lawrence, K.C., and Mr. M'Cardie appeared for the plaintiff; Mr. Jelf, K.C., Mr. Hugo Young, K.C., and Mr. Vachell represented the defendant Company. Mr. Lawrence announced that the action had been settled; the terms of settlement, as stated by Mr. Jelf, being that the plaintiff abandoned his claim, defendants to take out of Court the money paid in, and the plaintiff to pay the costs in the action. The plaintiff is to transfer to the defendants certain shares held by him in the Company.

The Fining of Water Wasters.

At Swansea Police Court last Tuesday Hannah Leonard and John Thomas were summoned for allowing water to run to waste on their property. In the first case a fine of 10s. and costs was imposed; but in regard to the second it was said that the defendant Thomas had been given notice in respect of three houses in Port Tennant Road as long ago as July 17 and 22, but only one leak had been attended to. It was calculated that the loss of water was 129,600 gallons, which, at 1s. 2d. per 1000 gallons, worked out to £7 11s. 2d. Defendant said he had warned the tenants, and had tried to get a plumber, but had failed. A fine of £10 inclusive was imposed.

The Reinstatement of Roads.

At a recent sitting of the Watford County Court, a case was heard in which the Wembley District Council claimed £15 16s. 8d. of the Colne Valley Water Company, in respect of the re-instatement of roads. Last year the Company opened the Union Road and Watery Lane, Wembley, to lay pipes. The Council wrote to them on several occasions, calling attention to the dangerous state in which the roads had been left, owing to the trenches not being properly reinstated. The Company referred them to their Contractors, Messrs. John Aird and Sons; but the Council refused to recognize the Contractors at all, and finally repaired the roads themselves. At a previous sitting of the Court, the Council sought to recover the expenditure they had been put to, under a certain agreement which had been entered into by the old Hendon Authority—the predecessors of the Council. His Honour (Sir Alfred Marten, K.C.) held that the agreement was not good, but granted an adjournment for the amendment of the claim. The amendment was now made, and the claim brought under the Water-Works Clauses Act. Evidence, which occupied the attention of the Court for a couple of hours, was given; and the Judge eventually gave judgment for the plaintiffs with costs. He said he was satisfied there was delay, and that the Company were liable for what had been done by the Council in order to restore the roads. A good deal was said in the case by some of the witnesses, to the effect that the proper way to deal with the trenches was to bank up the stuff and leave it, perhaps for months and months, for traffic to work it down. This was contrary to all the ordinary notions as to how a road ought to be made up; and he could not imagine anything more injurious to the public than that this should be done. He thought the Council were quite justified—in fact, it was their duty—in insisting upon the roads being made up, and the openings for the pipes made being reinstated. It was said that the pipes were laid at the request of the Council to provide for the supply of water. This did not matter. The defendants undertook the responsibility; and he had come to the conclusion they were responsible for the sum claimed. He therefore gave judgment for the amount, with costs.

Accident at the Frankley (Birmingham) Water-Works—A Compensation Case.

At the Birmingham County Court last Wednesday, before his Honour Judge Whitehorne, a case was heard, in which Sarah Wesson, of Northfield, as the next friend of Bertram Wesson, a boy of 14 years of age, sought to recover £120 damages from Messrs. A. Kellett and Sons, Limited, of Westminster, the Contractors for the Frankley (Birmingham) Water-Works, for injuries to the lad Bertram. The case was heard before a Jury. Mr. Tanner, in opening, explained that under the Employers' Liability Act the onus was cast upon the plaintiff of showing that there had been some negligence on the part of the defendants. The boy Wesson was employed by the defendants at Frankley to assist a man named Dobbs in driving a steam-crane which travelled on rails around the works. Dobbs on Saturday, Feb. 23 last, received instructions to move the crane from one part of the works to another; and the lad, who was engaged as fireman of the engine, jumped off to change some points. Having done this, he was instructed to walk in front of the engine to see that there were no obstructions. There was no brake on the engine; and therefore the man in charge had very little power over it. He had to rely upon "spragging," or placing an obstacle on the line; and it was the duty of the boy Wesson to stick a piece of wood —the "sprag"—under the wheels when it was necessary to stop. Further, the driver of the crane could not see the rails immediately in front of the engine. As Wesson was walking along the rails, he caught his foot in the check rail and fell across the metals. The crane wheels passed over one of his legs, necessitating amputation. Mr. Tanner maintained that the lad's permanent injury was the result of negligence on the part of the defendants. Counsel's statements having been borne out by witnesses, Mr. Parfitt, for the defence, submitted that there was no proof of negligence. Brakes were never attached to these cranes, as the drivers had the power of reversing the engines; and "spraggs" or baulks of wood were more effective than brakes. This statement was supported by the driver of the engine. The Jury returned a verdict for the defendants; but his Honour pointed out that an application under the Workmen's Compensation Act might be made. The next day, after going into the accounts of the boy's wages, his Honour made an award to the plaintiff of 4s. 2d. per week.

MISCELLANEOUS NEWS.

INTENSIFIED GAS LIGHTING IN WHITEHALL.

The new City Council of Westminster have ordered Whitehall, from Downing Street to Bridge Street, to be lighted by Sugg's high-pressure incandescent gas system. The work having been completed, the lamps can now be seen in use. The refuges opposite Downing Street have been fitted with lamps on this system for some months past as a trial. The lamps used for the refuges in Whitehall are the improved "Westminster" lamps, fitted with three of Sugg's high-pressure burners, consuming 10 cubic feet of gas per hour for each burner, or an aggregate of 30 cubic feet per hour for each of the lamps. The effective illuminating power given by each lamp is 1250 candles. The pressure of the gas in the mains is 2 to 3 inches, and it is raised to 10 inches by means of a small "pressure increaser," the base being 36 in. by 12 in., and the height 40 inches. The apparatus is fixed in a small space under the stairs in the underground lavatory at Downing Street. The number of refuge lamps in Whitehall lighted by the system is ten; and the volume of light given is claimed to be equal to an aggregate of 12,500 candles. The total consumption of gas is 300 cubic feet per hour. The cost of the lighting will be about half the amount required to give the same volume of light by electricity. It should be added that the lamps light the refuges and the roadway round them without casting shadows—a most important point in street lighting—and are thus a striking contrast to the electric lamps on the north part of Whitehall recently fitted by the now defunct Vestry of St. Martin's-in-the-Fields.

SOUTH METROPOLITAN GAS COMPANY.

Half-Yearly Accounts.

In the "JOURNAL" last week we published the report of the Directors of this Company for the half year ending June 30. We now give the principal portions of the accounts accompanying the report.

The first two statements relate, as usual, to the stock and loan capital. The former sets forth that the standard rate of 4 per cent. is payable on £5,761,885 of stock; while the latter shows that the loan capital, the rate of interest on which is 3 per cent., amounts to £1,627,965. The third statement is the capital account. It stands as follows: Amount received, £4,265,391 6s. 8d.; nominal amount added by conversion (less premium), £3,124,458 13s. 4d.—total, £7,389,850. The items of expenditure are as follows:—

Capital account to Dec. 31, 1900			£4,060,629 11 7
Expenditure during half year to June 30, 1901, viz.—			
New buildings and machinery in extension of works	£25,324 19 10		
New and additional mains and services	23,510 0 10		
New and additional meters	12,835 6 0		
New and additional stoves	18,873 2 4		
		80,543 9 0	
Total expenditure		£4,141,173 0 7	
Balance		124,218 6 1	
		£4,265,391 6 8	
Nominal amount added by conversion, less premium		3,124,458 13 4	
Total		£7,389,850 0 0	

The following is the revenue account:—

Expenditure.

Manufacture of gas—			
Coal into store, including cost of petroleum spirit for enriching and £24,688 11s. 2d. for labour	£503,369 12 5		
Purification, including £8276 0s. 10d. for labour	18,272 12 2		
Salaries of Engineer and Officers at works	9,360 19 8		
Wages (carbonizing)	64,385 16 8		
Repairs and maintenance of works and plant, including £51,932 17s. 4d. for labour, less £3730 4s. 7d. received for old materials	103,166 10 1		
		£698,555 11 0	
Profit sharing for twelve months to June 30, 1901		10,357 8 2	
Distribution of gas—			
Repair, maintenance, and renewal of mains and service-pipes, including £14,282 14s. 4d. for labour	£23,613 9 11		
Salaries and wages of officers, including Rental Clerks	12,113 0 10		
Repairing and renewals of meters, including £2227 11s. 8d. for labour	14,105 8 9		
Repairing and renewals of stoves, including £6604 3s. 9d. for labour	16,160 5 0		
Gas fittings (labour)	3,476 3 4		
		69,468 7 10	
Public lamps—			
Lighting and repairing, including £10,142 14s. 7d. for labour		15,500 3 7	
Rents, rates, and taxes—			
Rents payable	£919 9 4		
Rates and taxes	30,915 16 0		
		31,835 5 4	
Management—			
Directors' allowance	£1,784 14 5		
Salaries of Secretary, Accountant, and Clerks	2,754 6 7		
Collectors	9,920 13 0		
Stationery and printing	2,315 3 7		
General charges	6,779 4 5		
Company's Auditors	112 10 0		
		23,666 12 0	
Law charges	£2,075 0 7		
Parliamentary charges	3,047 4 10		
		5,122 5 5	
Bad debts		2,349 14 4	
Pensions and officers' and workmen's superannuation, sick, and accident funds		3,860 11 7	
Gas Referees and Official Auditor		330 9 0	
Leasehold renewal fund		300 0 0	
Total expenditure		£861,346 8 3	
Balance carried to net revenue account		220,314 2 8	
		£1,081,660 10 11	

Receipts.

Sale of gas—			
Lady-day at 2s. 8d. per 1000 feet	£432,097 2 4		
Midsummer at 2s. 8d. per 1000 feet	272,406 18 9		
	£704,504 1 1		
Public lighting and under contracts, including lighting, repairing, materials, &c., £15,500 3s. 7d.	30,114 2 4		
		£734,618 3 5	
Meters in use (223,005)—			
Company's meters at rent; Ordinary, 97,333; automatic, 115,999	£22,373 4 4		
Company's stoves at rent: Ordinary, 53,127; automatic, 93,482; fires, 12,040	18,117 1 4		
		40,490 5 8	
Residual products—			
Coke, less £2,175 11s. 4d. for cartage; £16,097 19s. 9d. for labour, &c.	232,639 7 7		
Breeze, less £567 13s. 4d. for cartage; £3319 17s. 4d. for labour, &c.	9,113 6 6		
Tar, less £140 5s. 9d. for cartage; £179 5s. 8d. for labour, &c.	22,712 10 11		
Ammoniacal liquor, less £192 12s. 6d. for labour, &c.	11,493 12 4		
Sulphate of ammonia, less £7697 7s. 5d. for acid, &c.; £3136 11s. 5d. for labour, &c.	29,381 4 9		
		305,340 2 1	
Rents receivable		1,143 17 3	
Transfer fees		68 2 6	
Total receipts		£1,081,660 10 11	

The net revenue account stands as follows:—

Balance from last account	£134,816 2 6
Amount from revenue account	220,314 2 8
Interest on banker's balances	585 4 5
	£355,715 9 7
Dividend for half year ending Dec. 31, 1900	£142,547 2 6
Interest on temporary loan and deposits	8,462 0 10
,, on debenture stock	24,419 9 6
Amount carried to insurance fund	14,671 0 0
Balance applicable to dividend on the ordinary stock	165,615 16 9
	£355,715 9 7

Following this are the statements relating to the reserve, renewal, and insurance funds. They show that the balances on the 30th of June last were as follows: Reserve fund, £135,362; renewal fund, £21,016; insurance fund, £69,646. The statements relating to manufacturing operations are as follows:—

Statement of Coal, &c., Used.

Description.	In Store Dec. 31, 1900.	Received During Half Year.	Carbonized During Half Year.	Used During Half Year.	In Store June 30, 1901.
	Tons.	Tons.	Tons.	Tons.	Tons.
Newcastle coal	135,599	506,241	585,663	482	55,695
Cannel coal	922	..	*122	..	800
Total	136,521	506,241	585,785	482	56,495

* 233,302 gallons of petroleum spirit used as a substitute for cannel.

Statement of Residual Products.

Description.	In Store Dec. 31, 1900.	Made During Half Year.	Used During Half Year.	Sold During Half Year.	In Store June 30, 1901.
Coke—cwts.	406,100	7,237,043	1,935,297	5,564,246	143,600
Breeze—yards	11,299	160,531	41,637	118,304	11,889
Tar—gallons	670,973	5,457,214	318,077	5,186,101	624,009
Ammoniacal liquor—butts	35,388	176,723	139,737	59,562	12,812

Statement of Gas Made, Sold, &c.

Quantity Made.	Quantity Sold.		Total Quantity Accounted for.	Number of Public Lamps.
	Public Lights (estimated).	Private Lights (per Meter).		
Thousands.	Thousands.	Thousands.	Thousands.	
5,743,385	170,649	5,330,347	5,586,028	21,676

The remaining statement is the balance-sheet, which gives the value of the stores in hand at the close of the half year as follows: Coal and enriching materials, £48,333; coke and breeze, £6454; tar, sulphate, and ammoniacal liquor, £8431; and sundries, £199,452. The figures this time last year were: Coal, &c., £144,444; coke and breeze, £6999; tar, &c., £9038; and sundries, £166,411. A sum of £24,080, workmen's bonuses and savings, has been deposited with the Company; and the total of the officers' superannuation and guarantee funds is £33,335. The figures this time last year were £40,879 and £41,142. Appended to the accounts is the certificate of Sir R. Giffen, the Official Auditor, who points out that a forfeiture amounting to £2, incurred during the half year, must be paid out of the divisible profits, and by way of reduction of dividend.

CRYSTAL PALACE DISTRICT GAS COMPANY.

Half-Yearly Report and Accounts.

The report which the Directors of the above-named Company will present at the half-yearly general meeting next Friday opens with the satisfactory announcement that the annual coal contracts have been renewed at a reduction which nearly brings the price down to that preceding last year's great rise, though it is still some 2s. or 3s. above the low rates of 1897. With the fall in the price of coal, coke has also fallen in proportion, as was to be expected; but the net result is that the Directors have felt justified in reducing the price of gas, as from

midsummer by 3d., to 2s. 7d. per 1000 feet, which is only 1d. above the figure at which it was sold prior to last year's advance. The sale of gas is very slightly below that of the corresponding half of last year; but it is explained that there was then an exceptional increase of 11 per cent. Any appreciable advance upon this could not, under ordinary circumstances, be expected, for large advances do not follow each other in the next succeeding year. Moreover, there was the adverse influence of the higher-priced gas, which certainly induced economy of consumption. Immediately on the announcement of the reduction, satisfactory increases again appeared. The value of residual products other than coke has remained practically without change; not being affected by the variations in the price of coal. The general result of the half-year's working is a profit sufficient to pay the full dividend, and leave a balance of £2696 18s. 1d. to carry forward. The Directors therefore recommend a dividend at the rate of 5 per cent. per annum on the ordinary stock, and 5 per cent. on the preference stock, less income-tax as usual. The Directors express very great regret in announcing the death of their highly-esteemed and much-respected colleague, Mr. Frederic Lane Linging, who served the Company well and faithfully as a Director for forty years. They also much regret to announce the retirement of another greatly-respected colleague, Mr. James Glaisher, F.R.S., whose extraordinary mental and physical powers enabled him to perform the duties of Director up to the age of 92. As he could no longer attend the Board, he resigned his seat. For thirteen years as Auditor, and since 1884 as a Director, he devoted himself to the service of the Company. The Directors (as already announced in the "JOURNAL") have filled the vacancies by the election of Mr. Jabez Light, a Director of the Metropolitan Railway, and for many years Goods Manager of the South-Eastern Railway, and Mr. Bryan Donkin, head of the well-known firm of engineers.

The accounts accompanying the report show that in the period covered by them a sum of £5603 was spent for capital purposes; bringing up the total expenditure to £746,415, and leaving a balance of £12,113 out of the £758,528 received, which includes £32,388 premium capital. The sale of gas produced £84,876; rental of meters and stoves, £4013; residuals, £24,356; and rents, £10—making a total revenue of £113,255. The expenditure on the manufacture of gas was £77,276 (the principal items being £43,166 for coal and labour, £12,053 for oil and coke for oil gas, £6229 for carbonizing wages, and £11,249 for repair and maintenance of works and plant); on distribution, £6669; and on management, £3402—the total expenditure being £92,096. The balance carried to the net revenue account is £21,159; and the sum available for distribution, £18,571. The statements relating to the manufacturing operations of the Company show that, under the supervision of the Engineer (Mr. S. Y. Shoubridge), 49,855 tons of coal, 379,561 gallons of oil, and 96 gallons of carburine were employed in the production of 498,729,000 cubic feet of coal gas and 143,159,000 cubic feet of oil gas—together, 641,880,000 cubic feet, of which 606,846,000 cubic feet were sold and 614,527,000 cubic feet accounted for. From the statement of the residuals we learn that the production of coke in the half year was 585,772 cwt., of which 68,793 cwt. were used in the manufacture of oil gas; of breeze, 16,851 yards, of which 1599 yards were used for the above-named purpose; of tar, 584,326 gallons from the ordinary source, and 38,000 gallons from the oil-gas making (5000 gallons of the latter being used in the production of this gas); and 10,214 butts of ammoniacal liquor, the whole of which, with some of that in store, was used in producing 506 tons of sulphate.

CROYDON COMMERCIAL GAS AND COKE COMPANY.

Half-Yearly Report and Accounts.

When the shareholders in the above-named Company meet next Friday, they will have the gratification of learning from the report of the Directors that the quantity of gas sold shows an increase of 5·15 per cent. on that of the corresponding period of last year. The additional number of ordinary consumers during the half year was 192; and of prepayment and automatic consumers, 489—making the total number 16,682. There were supplied on hire 669 additional gas-stoves; making a total of 8424. The increased expenditure due to the high prices of coal, oil, and other materials (most of which were purchased under contracts expiring in June), coupled with a reduction in the receipts for residuals, has, as was anticipated, adversely affected the profit during the half year. The Directors express their pleasure in stating that the contracts entered into for the ensuing year are upon much more favourable terms; and they confidently expect that the result of the trading in the current six months will enable them to announce a reduction in the price of gas. Owing to the continued increase of the Company's business, it is found necessary to raise additional capital.

The accounts accompanying the report show that the capital expenditure was increased in the first six months of the year by £7496; bringing up the total to £413,188. As the receipts amount to only £394,031, this account has been overdrawn to the extent of £19,157. The sale of gas for public and private lighting produced a revenue of £59,588; the rental of meters, stoves, and fittings, £4060; residuals, £16,732; and rents, £78—making altogether, £80,458. The expenditure on the manufacture of gas came to £56,471 (coal, oil, &c., costing £43,223); on distribution, to £7611; and on management, to £2382—the total expenses being £71,691. The balance carried to the net revenue account is £8767; and the sum available for distribution is £10,729. This will be insufficient to pay the ordinary dividends; and the Directors therefore recommend that the sum of £5556 be withdrawn from the reserve fund and added thereto—making together £16,285—and that dividends be declared for the half year at the rate of 14 per cent. per annum on the consolidated "A" ordinary stock, of 11 per cent. per annum on the consolidated "B" ordinary stock, of 9 per cent. per annum on the consolidated "C" ordinary stock, and of 9 per cent. per annum on the "Carshalton capital" ordinary shares, all free of income-tax. The statements relating to the manufacturing operations show that, under the supervision of Mr. J. W. Helps, the Company's Engineer and Manager, 27,484 tons of coal, 10 tons of cannel, and 377,225 gallons of oil were employed in the production of 425,245,000 cubic feet of gas, of which 405,344,900 cubic feet were sold and 410,062,900 cubic feet accounted for. The estimated quantities of residuals produced were as follows: Coke, 16,496 tons; breeze, 3847 tons; tar, 345,713 gallons; and ammoniacal liquor, 677,761 gallons. The quantity of sulphate of ammonia made in the half year was 220 tons, the whole of which, with 60 tons in store, was sold.

BRENTFORD GAS COMPANY.

The Half-Yearly General Meeting of this Company was held last Friday, at the Charing Cross Hotel—Mr. HOWARD CHARLES WARD in the chair.

The SECRETARY (Mr. W. Mann) read the notice calling the meeting; and the report and accounts, the main features of which were given last week, were taken as read.

The CHAIRMAN, in moving the adoption of the report and accounts, said there had been an increase of about 4½ per cent. in the quantity of gas sold during the half year. This was by no means unsatisfactory because of the climatic conditions, which had been singularly adverse to a large consumption of gas. The winter was light, and the spring was hot; and therefore they could not expect there would be a great increase in the quantity of gas consumed. A new retort-house was in course of construction at Southall; and, in regard to it, he thought he might tell the proprietors that it would not be ready for use during the ensuing winter. They did not want it, as they had plenty of margin; but that they would require it, and that very shortly, was evident from a fact their Engineer (Mr. James Husband) told him, that since the 1st of July there had been a constant increase of about 9 per cent. in the amount of gas consumed; and this 9 per cent. was upon an increase of 7 per cent. in the corresponding period of last year. So that, if they went on with this sort of increase, the expectation that the new house would be wanted very shortly would be fulfilled. Coming to the capital, it might be remembered that the capital account was in debt to the revenue account last Christmas to the amount of £12,218; and so it was evident that it was abundant time they raised a little more capital. They had therefore issued further debenture stock to the extent of £46,875; and the premium paid on it made the amount £49,930. There had been expended on capital account during the half year £14,743; but in reality this was not all that had been spent, because it would be seen that the item "new and additional meters and stoves" had only £457 charged against it. As a matter of fact, above £9200 had been written off these articles for depreciation. Stoves, prepayment meters, and fittings were very perishable things; and they wrote them down very liberally. Therefore, although the £457 looked as though there was only a small increase going on, it was not actually the fact, because there was the £9000 odd to be added to it. As they stood now, they had a balance on capital account of £22,968. Now turning to the revenue account, the first thing that made itself disagreeably evident was this: Although there had been an increase of 4½ per cent. in the amount of gas sold, there had been more than a 4½ per cent. increase in the cost of the raw materials. The coal and oil that had been used in the manufacture of gas during the half year had cost £82,608, as against £65,915, which was an advance of £16,694. The other items of manufacture had only slightly increased by reason of the extra quantity of gas manufactured. In distribution, things had gone on very much the same. There was a small addition to the item of salaries and wages of officers, including rental clerks. Repairs to, and maintenance and renewal of, mains and service-pipes had been carried on very liberally. They had spent in this direction £1000 in addition to the amount expended in the June half of 1900—the actual figures being £7184, as compared with £6139. Then in repairs and renewals of meters, they had spent £4104, as against £3751; and in repairs and renewals of stoves, the expenditure had been £5101, compared with £4172. Of course, the bulk of these amounts represented the sums written off for depreciation of stoves, meters, and fittings. As a matter of fact, they annually wrote 15 per cent. off the automatic fittings, 12½ per cent. off the stoves, and 10 per cent. off the meters. From the time of their being purchased and supplied, these things would disappear as a capital charge—the fittings in about 6⅔ years, the stoves in about 8 years, and the meters in 10 years. In these periods, they all became the property of the Company without any charge appearing for them in the accounts against capital. It would be interesting to the proprietors to hear some figures which had been very carefully got out for him by Mr. Mann. They dated from July 1, 1894—seven years ago—when the Company began to supply prepayment meters and fittings. Since then the amount expended and charged against capital had been £150,088. The amount written off had been £65,001; and therefore, although these things had cost the capital £150,088 since 1894, they stood in the books to-day as being only of the value of £85,087! This, he (the Chairman) considered, was a very healthy feature of the accounts. Rates and taxes had increased; but this was mainly due to the increase in the income-tax. Turning to the other side of the revenue account, the gas-rental had advanced from £118,783 to £124,651; coke, from £23,190 to £28,946; meter-rental, from £8398 to £9205; and stove rental, from £2101 to £2304. Breeze had increased very little; tar had gone down; and ammoniacal liquor remained very much where it was. But the result of all these figures was this—and this was a very important thing—that although their outlay for coal and oil had increased from £65,915 to £82,608, or nearly £16,700, the profit made had only decreased by about £10,000. It must be remembered that this had been done while the Company had held, he thought, the very enviable position (he believed he was correct in saying) of being the only Metropolitan or Suburban Gas Company who had not, in spite of the great increase in the cost of coal and oil, raised their price for gas. The Directors saw their way to carry on without doing so; and he thought the consumers were generally more contented than if the price had been advanced. He thought this had borne fruit, and would bear fruit in the future. It had at any rate shown that the Directors were a reasonable set of men, endeavouring to conduct their business in a manner which would enable them to charge the least possible price. The net result of all this was that they had to take from the

undivided profits the sum of £4361 to pay the dividend proposed; and they would then carry over £35,811 of undivided profit, in addition to the reserve fund, which now amounted to £11,618. This was the state of their affairs, which he thought he had the right to consider as fairly satisfactory; and he hoped the proprietors would think the same. There was one other matter he wished to mention. The Company had had a great loss by the death of a gentleman whom the proprietors had often seen sitting at his (the Chairman's) left-hand side. He referred to their late Secretary (Mr. William Croxford)—a man whom the Directors greatly respected. He was patient, high-minded, and an excellent officer. He had served the Company for about 46 years, but had been in failing health for some time. He passed away at the beginning of the half year. The Directors had sent a resolution to the widow and family expressing their regret, and acknowledging the loss the Company had sustained.

Sir R. H. WYATT seconded the motion.

Mr. HUGHES inquired whether the Directors had made satisfactory coal contracts.

The CHAIRMAN replied that the Board had managed to make good contracts for quite the next twelve months; and they hoped by that time the price of coal would have come down even more than it had done. They had every prospect, he thought, that they would be able to carry on without raising the price of gas. Not having so far increased the charge, he should not believe the consumers would be so unreasonable as to think that, because other people who had increased their prices were now lowering them, they (the Brentford Company) would also be able to reduce theirs. He did not think the consumers would be so unreasonable.

The motion was unanimously passed.

Dividends were declared at the rate of 5 per cent. per annum on the 5 per cent. preference stock, 12 per cent. on the consolidated stock, and 9 per cent. on the new stock.

On the motion of Mr. HUGHES, seconded by Mr. R. L. O'BEIRNE, the services of the Chairman and Directors and officers were heartily recognized.

BROMLEY GAS CONSUMERS' COMPANY.

The Half-Yearly Meeting of this Company was held last Thursday, at the Bell Hotel, Bromley—Mr. ALEXANDER DICKSON in the chair.

The SECRETARY (Mr. H. W. Amos) having read the notice convening the meeting, the report and accounts were taken as read.

The CHAIRMAN, in moving the adoption of the report and accounts, reminded the shareholders of the view expressed by the Directors in their previous report, that they felt somewhat confident they would be able to tide over the emergency without contemplating any worse conditions either to the shareholders or the consumers than those which then prevailed; and he thought the report the Directors were able to submit on this occasion would be received as being, in this respect, very satisfactory, inasmuch as that hope had been very largely fulfilled. With regard to the Company's progress, he said that during the corresponding period of last year the make of gas was abnormally increased; and during the first half of this year they had the good fortune not only to maintain that large increase, but to add another 2 millions to it, notwithstanding the tendency which the prevalence of a high price undoubtedly had of promoting economy and minimizing somewhat the consumption of gas. He believed the shareholders would also be satisfied to find that the experience of the Company in this respect had been much better than that of some of the neighbouring concerns, where the consumption of gas had actually fallen off. Looking at the revenue account, it would be found, on comparison, that the rental from gas and meters had been increased by £2006; that they had realized from the sales of coke and breeze £293 more; and that on the fittings account and rental of fittings and stoves there was a gain of £147. On the contrary, they had realized £165 less from sulphate of ammonia; and a few pounds less from tar and other small items. The net increase of income for the half year was therefore £2277. Turning to the expenditure, they were, of course, confronted at once by the largely increased cost in the item of coal—viz., £3780. He mentioned in passing that the total increase in the cost of coal over the twelve months ending on June 30 exceeded £7000. Then in the item of repairs of meters and renewals, they had an increase of £114; in fittings on hire, £139; and in rates and taxes, £49. Other items mentioned also exhibited small advances. But in the items of purifying materials, wages, and repairs of works, machines and retorts, there was a decrease of £313. Here, also, he emphasized that, although they had been passing through an emergency, the Directors had not in a single instance departed from what he ventured to term their wise plan of writing down depreciation of perishable plant half year by half year; and that, although these items were reduced by £313, the reduction was not in any way due to the diminution of the writing off in respect of depreciation. Then in the matter of repairs of mains and services and stoves, they had decreased charges of £369. This arose from the fact that, this time last year, they were engaged in renewing the services very largely throughout the town. This having been done, the expense did not recur. They had also a diminished outlay of £622 in respect of legal expenses. Adjusting the various figures, it would be found that the net increased expenditure amounted to £2921. Setting this against the net increased income, they had, as between this half year and the corresponding one of 1900, a disadvantage of £644. Following on to the profit and loss account, it would be found that there was an increased payment for interest of £243, which made a total disadvantage on these accounts of £887. He thought, all things considered, that the result of this statement would nevertheless be received as very satisfactory. Proceeding to deal with the balance at disposal, he said it would be seen that the amount transferred from the revenue account to profit and loss was £6760. Out of this had to be taken the sum paid in interest on debenture stock and loan capital—viz., £970—leaving a net amount of £5790 as the earnings of the half year. To complete the payment of the dividend at the same rate as heretofore—a rate which, by the way, only returned to the holders of the modern capital something between 4 and 5 per cent.—they would require £6555; thus leaving a deficiency of £765. In their case, as in the experience of other people, thrift always came to aid at the critical moment; and so they had on the profit and loss account an accumulation of small amounts of undivided profit, totalling to £2577. Out of these savings, they took the £765 to make up the sum required for dividend, and this would still leave £1812 to carry forward and to face the business of the current half year. Then, with regard to the coal contracts, they had made them at greatly reduced prices. The only merit that perhaps the Directors could take to themselves in the matter was that they had done quite as well as any of the other companies, and, he believed, in some cases, they had even done better—the price at which they purchased, by going to the market at the right time, being slightly more favourable than had obtained since. As he had already mentioned, they had received an increase on gas and meter rental of £2006; but of this sum about £1906 was due to the increased price they had charged of 4d. per 1000 cubic feet. Practically, the Company had only recouped about two-fifths of the increased cost of coal by the extra sum they had asked the consumers to contribute in this emergency. The remaining three-fifths had been made up from the disposal of the residuals, from economies, and from less expenditure. The present position was much more favourable than when the shareholders last met; and the Board looked forward to a very considerable advantage in the coming year from the contracts for coal. At the same time, the position was rendered somewhat nebulous with regard to the coming condition of the residuals market, more especially in the matter of coke. Of course, a rise in the price of coal meant an increase in the price of coke; and a fall in the price of coal obviously carried with it a considerable fall in the price of coke. Therefore until they got further into the winter, and saw what this would mean to them, they could hardly tell what would be the exact result of the coming business. However, looking at the position all round, the Directors felt sufficient confidence (and he need not say they most gladly did it) to recommend the shareholders to acquiesce in a reduction of 2d. per 1000 cubic feet in the price of gas; and in making this announcement, it was hardly necessary for him to add that the Directors would be only too pleased to proceed farther in this direction at the earliest possible moment. The Chairman concluded his speech with a reference to the Company's new town offices.

Mr. A. E. WILLETT seconded the motion, which was unanimously carried.

A resolution was next passed declaring a dividend at the rate of 12 per cent. per annum on the original 10 per cent. capital and 9 per cent. on the ordinary 7 per cent. capital, both subject to income-tax.

In consequence of the death of Mr. W. W. Baynes, one of the Auditors, the Rev. R. T. VERRALL moved, and Mr. A. WRIGHT seconded, the election to the vacancy of Mr. E. E. Price.

The motion was unanimously agreed to.

The cordial thanks of the shareholders were passed to the Chairman and Directors and to the Engineer (Mr. W. Woodward) and the Secretary (Mr. H. W. Amos); the value of the services of the latter two gentlemen being specially remarked upon by the Chairman.

PROVINCIAL GAS AND WATER COMPANIES.

We commence to-day our usual notes on the progress made by Gas and Water Companies in various parts of the kingdom whose reports and accounts come to hand about this time.

Gas Companies.

In the report which the Directors of the Bristol Gas Company will present at the half-yearly general meeting next Thursday, they state that the increase in the consumption of gas in the first half of the year was more than 6 per cent. above the corresponding period of 1900. The high price of coal necessarily materially affected the revenue account for the whole of the past year; but contracts for the current twelve months have been concluded at considerable reductions. A sum of £21,493 was expended on capital account in the period covered by the report; £9253 being for new stoves. The sale of gas produced £115,286, against £108,122; residuals yielded £47,938, compared with £46,880; and the total revenue was £167,143, against £158,553. The expenditure was £158,500, compared with £119,546; and the balance carried to the profit and loss account is £8642, against £39,007. The amount standing to the credit of that account is £34,709; and after paying interest on the debenture stock (£5052) and providing for dividend on the general capital stock (£25,796), there remains a balance of £3861 to be carried to the credit of the next account. The Directors recommend the declaration of a dividend at the rate of 5 per cent. per annum on the nominal capital of the Company.

At the recent half-yearly general meeting of the Cambridge University and Town Gaslight Company, the Directors reported that the installation of the second half of No. 2 retort-house with inclined retorts was in hand, and would be ready for use during the coming winter. When the work was completed, it would effect a considerable saving in the cost of labour. The alterations and additions at the works which have been made during the past three years (under the supervision of the Engineer and Manager, Mr. R. Brown) had proved advantageous; and further improvements in the plant, which the Directors had in contemplation, would be carried out at an early date. They recommended payment of a dividend at the same rate as at the last half-yearly meeting—viz., 9½ per cent. per annum on the original stock, £6 13s. per cent. per annum on the "B" stock, and £4 15s. per cent. per annum on the "C" stock, less income-tax; and this was agreed to.

The accounts for the six months ending June 30 last which were presented to the proprietors of the Chester United Gas Company at their half-yearly meeting last Wednesday, showed that the revenue from the sale of gas had been £16,635, and the total revenue £21,747. The expenditure having been £16,379, there was a balance of £5368 to go to the profit and loss account. The amount available for distribution was £3845; and the Directors recommended the declaration of interim dividends at the statutory rates. With regard to the works, which are under the supervision of Mr. John C. Belton, the Board

reported that the contract with West's Gas Improvement Company, Limited, was progressing satisfactorily; and they hoped that on a very early date the new apparatus would be in use in one section of the reconstructed retort-house, which was described in the "JOURNAL" for the 30th ult. (p. 281), and that the whole would be ready for use before the time of the full winter season's demand. The Chairman (Mr. J. Gamon), in moving the adoption of the report, said the past half year had been an eventful one. The Company's new Bill had passed through Parliament, and by it they had secured additional facilities for carrying on the business, and had obtained powers to raise all the money they would require for the next 15 or 20 years. Alluding to the new retort-house referred to in the report, he said they must congratulate Mr. Belton, their Engineer, who prepared the plans and specifications, upon the success which had been obtained through his advice and by his assistance in the addition to, and alteration of, the mechanical work and in the remodelling of the retorts. His attention and zeal in superintending the new work and supervising all the necessary adjustments for supply during the present transition stage had won him the thanks of the Company. In the course of the half year, the Directors submitted to the men a profit-sharing and pension scheme; and already 54 out of 75 workmen had agreed to work under it. It was expected that the others would come in. They were not pretending to put before the men any scheme of benevolence, but a sound business transaction. He believed the economy that might be effected by the men in the works in preventing waste and idleness would go to pay the bonus. The report was adopted and the dividends declared. It was also decided to raise additional capital by the issue of fresh stock.

At the half-yearly general meeting of the Coatbridge Gas Company last Thursday, the Directors reported that the profit for the six months was £186 16s. 2½d. short of the sum required to meet the dividend and interest. This had arisen through a higher quality of gas having been supplied, and the cost of coal being much above that of the corresponding half of last year. The sales of gas amounted in the aggregate to 54,194,000 cubic feet; being an increase of 810,000 cubic feet. The gross revenue was £10,994, or £750 more; and the net profit, £2329. The sum of £2768 was applicable to current dividends; and the Directors recommended the payment thereof at the rates of 10 and 7 per cent. per annum, less income-tax. Extensions and alterations of the plant have been in progress under the supervision of Mr. Thomas Wilson, the Company's Engineer and Secretary. They have been satisfactorily completed at a cost of £23,416.

The half-yearly general meeting of the Derby Gas Company was held last Wednesday—Mr. H. Swingler, J.P., in the chair. In moving the adoption of the report, he stated that in the six months covered by it, the Company had made 2 per cent. more gas, with 2000 tons less coal. This, of course, spoke well both for the quality of the material and for the management, and proved that their Engineer (Mr. J. Ferguson Bell) was looking after his detail work very closely. As compared with the corresponding half of 1900, their outlay for coal was £8000 more. This was a considerable sum to have to make up; but, fortunately, they had a large source of revenue from their residuals. On the expenditure side there was a very satisfactory decrease in carbonizing, amounting to £5506. The revenue side of the accounts showed that the sale of gas had increased by £3484; and coke had yielded £8283, or an increase of £1048. The amount received from residuals was £12,199, or an advance of £610. The total revenue for the half year was £53,607; expenditure, £39,146—leaving a gross profit of £14,461. They required for dividends and interest £10,394; leaving a balance of rather more than £4000. It had been remarked that the half-year's account was the most prosperous one that had been announced by the Board. A great deal was due to the energy of their Engineer. He (the Chairman) thought it was twelve months since he introduced him, and he then said he could not say much about him. Now he could speak from experience, and prove from the figures what he had been to them during the past twelve months. With regard to their coal contracts, though they had not bought the quantity they would require during the next twelve months, they had purchased 38,000 tons. He was pleased to say that in the purchases already made they had saved 4s. 7d. per ton on last year's figures. As to the price of gas, it was the Directors' intention to reduce it by 3d. per 1000 cubic feet at the end of the present quarter. The report was adopted; and dividends at the rates of 10, 7, and 5 per cent. per annum were declared on the various classes of stock.

The revenue of the Dorchester Gas and Coke Company in the six months ending June 30 last was £4124; the expenditure, £3009—leaving £1115 to go to the net revenue account. The balance available for distribution is £1146; and at the half-yearly meeting to-day the Directors will recommend dividends at the rates of 10 and 6 per cent. per annum on the ordinary and preference stocks—the former free of, and the latter less, income-tax. There was an increase in the consumption of gas compared with the corresponding half of 1900.

At the half-yearly general meeting of the Grantham Gas Company last Tuesday, the Directors reported a satisfactory increase in business. The demand for stoves and prepayment meters anticipated at the previous meeting had been fully realized. The coal contracts had been made on more favourable terms than last year. A dividend for the six months at the rate of 5 per cent. per annum on the consolidated stock was declared.

The half-yearly report of the Directors of the Malton Gas Company sets forth that the additional outlay on coal was £333, while the receipts for coke were less by £144. The net profit was £1248, against £1336 in the first half of 1900. The Directors recommend a dividend of 5½ per cent., free of income-tax, leaving £1658 to be carried forward. It has been decided to erect carburetted water-gas plant; and it is proposed to call up a further £1 per share on the £10 shares, and to exercise the Company's borrowing powers for the remainder of the capital required. The works are to be improved, and carburetted water-gas plant put in, at a cost of £3500.

The profit realized by the Town and County of Poole Gas Company in the six months ending the 30th of June was £889, which was insufficient by £111 to pay the ordinary dividends. The deficiency was caused by the high price of coal, which cost £797 more than in the corresponding period of 1900. There was a good market for coke; and the higher price obtained for this residual, together with an increase of 8·3 per cent. in the sale of gas for private consumption, partly met the extraordinary expenditure for coal. At the half-yearly meeting yesterday, the Directors recommended that the usual dividends should be declared.

According to the accounts to be presented at the half-yearly general meeting of the Scarborough Gas Company next Saturday, there is a balance on the net revenue account, including £1638 brought forward, of £5843. After providing for the dividend on the preference stock, the Directors recommend the declaration of the maximum dividends on the ordinary stocks, less income-tax. The payment of these will require £6588, and will necessitate a transfer of £1104 from the reserve fund. This deficit, they say, is more than explained by the facts that during the six months £752 was paid on account of re-sheeting the inner lift of No. 1 gasholder, and that, in order to facilitate the preparation of the accounts, the reading of the quarterly consumers' meters was completed nine days earlier than was the case last year—an alteration which accounted for a difference of upwards of £400. The revenue in the six months covered by the accounts was £21,690; the expenditure, £17,071—leaving a balance of £4619. The quantity of gas sold for private consumption was 105,637,100 cubic feet; for public lighting, 10,626,700 cubic feet—the revenue from both sources (less discounts) being £16,634.

The financial statement of the Yeadon and Guiseley Gas Company for the past six months shows that the receipts were £6893, and the expenditure £5605—leaving a balance of £1288. The maximum dividends of 10 and 7 per cent. per annum on the two classes of stock are recommended.

Water Companies.

At the last half-yearly meeting of the Cambridge Water Company, the Directors in their report recommended that a dividend for the six months ending June 30 on the consolidated stock issued under the Acts of 1853, 1855, and 1866, at the rate of 10 per cent. per annum, and upon the consolidated stock issued under the Act of 1886, and upon the amount paid on allotment and first call on the new shares for the half year, at the rate of 7 per cent. per annum, be declared, less income-tax. The Engineer and Manager (Mr. W. W. Gray) reported that during the half year water had been laid on to 188 premises, the rental from which would be £191 per annum; and that the total number of premises supplied was 16,010. He added that the general condition of the Company's works was satisfactory. The reports were adopted.

The half-yearly meeting of the Chester Water Company was held last Friday. The report of the Directors stated that the accounts for the half year showed a surplus revenue over expenditure of £2985; making, with the balance brought forward from the half year ending Dec. 31, 1900 (after payment of dividends), £6390—a total of £9375. The interest on preference capital required £450, leaving a balance of £8925. It was recommended that the usual statutory dividends be paid (free of income-tax), which would absorb £1890; leaving £7035. The Chairman (Mr. F. E. Roberts) in moving the adoption of the report, said the total amount of water pumped showed a great increase during the summer months. He thought that their customers could congratulate themselves that, in spite of the tremendous drought, they had an unlimited supply of water. The best test of the water's purity and excellence was the death-rate, which for 1900 was a little over 19 per 1000, and the average for ten years was over 20; but if they included their outlying districts, which were also supplied with Chester water, they would bring the death-rate down to something like 15. Mr. John Taylor seconded; and the report was adopted.

The 66th half-yearly report of the Directors of the Cleveland Water Company has been issued. It relates to the six months ending the 30th of June, and sets forth that, after providing for all expenditure, there remains a balance of £4979, which enables the Directors to recommend a dividend at the rate of 10 per cent. per annum on the original and "A" shares, and 7 per cent. per annum on the "B" shares, less income-tax. A balance of £1454 is to be carried to the credit of the next account.

The report presented by the Directors of the Grantham Water Company at the last half-yearly meeting showed a balance on the revenue account of £7518 17s. 8d. They proposed that £1750 should be applied in payment of a dividend at the rate of 10 per cent. per annum for the six months, and the balance of £5768 carried forward. This was agreed to.

The half-yearly meeting of the Leatherhead and District Water Company was held last Friday—Mr. John Boustead, J.P., in the chair. The Directors in their report stated that the receipts for the half-year ended June 30 amounted to £2940, and the working expenses to £1693—leaving a profit of £1247. To this had to be added £761, the amount brought from the previous half year, making a total of £2008. Deducting from this sum £161, interest on debenture stock, there remained £1847 available for distribution. The Directors recommended a dividend at the rate of 5½ per cent. per annum. This would absorb £975, and leave a balance to be carried forward amounting to £872. During the half year 37 new services were laid on; and applications for more are still being received. The Company's Engineer (Mr. F. S. Cripps) reported that the water supply during the six months, both as regarded quantity and quality, had been satisfactory. About 1100 yards of 3-inch mains had been laid; and the foundations for a new boiler-house would shortly be started. The Chairman, in moving the adoption of the report, said that, taking into consideration all the circumstances, they had good reason to congratulate themselves on the satisfactory position of the Company. They had pumped 68 million gallons of water during the half year, as against 53½ millions in the corresponding period of last year. Owing, however, to the rise in the price of coal, there had been an increased outlay on fuel to the extent of 5s. per million gallons pumped. From the 37 new services laid on, they anticipated an annual revenue of £273, of which only a small portion had been contributed during the period under review. They had recently made arrangements to supply the Chessington district with water in bulk, which he thought was very satisfactory, seeing that the Company had incurred no expense in the laying of mains. The profit for the half year was £283 in excess of that for the six months to June, 1900. This would have allowed of the dividend being increased to 6 per

cent.; but the Board thought it better to add to the carry-forward than to declare a higher dividend. This would strengthen the position of the Company, and enable them to meet any emergencies that might arise owing to the extended area now supplied. Since the retirement of Mr. Rokeby Price, the Board had come to the conclusion that it would be advisable to reduce the number of Directors from five to four; but they wished to have the opinion of the shareholders before taking definite steps in the matter. The report was adopted.

The water-rental of the Maidstone Water Company amounted, in the past half year, to £6023; being an increase of £565. To credit of the profit and loss account there is a sum of £4170; and dividends at the rates of 6 and 4¼ per cent. per annum are recommended on the 10 and 7 per cent. shares respectively. These payments will absorb £1351; leaving £2819 to be carried forward.

The report of the Directors of the Pontypridd Water-Works Company for the six months ended June 30, sets forth that, after payment of interest on debentures, and providing the usual dividends for the preference shares, there remains a balance of £4258, out of which they recommend dividends at the rate of 7½ per cent. per annum on the original and ordinary shares, and of £5 5s. per cent. per annum on the new ordinary shares, subject to a deduction of income-tax. The payment of these will absorb £3645, and £613 will be carried forward.

The report of the Directors of the South Staffordshire Water Company sets forth that the number of houses laid on during the half year ending June 30 last was 1867; making the total supplied 110,527. The gross amount of water-rates for the six months was £55,418, against £54,176 in the corresponding period of the previous year. After providing for interest on debenture stock and preference stock, the amount remaining for distribution, including £5746, the balance brought forward, is £22,657. The Directors recommend the declaration of a dividend for the half year on the ordinary stock at the rate of 5½ per cent. per annum, tax free, carrying forward £6294. The Provisional Order granted by the Board of Trade for the increase of the Company's capital by the sum of £300,000 has been confirmed by the Water Orders Confirmation (No. 1) Act, 1901, and it will be proposed at an extraordinary meeting, to be held immediately after the ordinary meeting on the 29th inst., to create £100,000 of the £300,000, and to authorize the Directors to issue the same, by public auction or tender, partly as preference and partly as ordinary stock; also to authorize the creation of debenture stock to the amount the Company are empowered to borrow on mortgage in respect of the additional capital for the time being raised under the Act. The Company's Engineer (Mr. H. Ashton Hill) reports that the whole of the machinery, buildings, and plant of the Company are in substantial order and repair.

At the half-yearly general meeting of the York Water-Works Company on the 1st inst., the accounts presented showed that the rental had increased by £294; and though there had been extra expenses, the Directors were in a position to recommend the usual dividends without touching previous accumulations. The Chairman (Mr. J. S. Rymer), in moving the adoption of the report, referred to the necessity for reducing the large consumption of water in the city. He said that if they took the population they supplied to be 90,000, it showed 32½ gallons per head per day—viz., for domestic and other purposes, 25¼ gallons; and for trade purposes, 7¼ gallons. The consumption for domestic purposes was very high. To show this he gave the quantities (in gallons) in a few other towns: Carlisle, 17; Gloucester, 17; Lincoln, 18; Bath, 19; Scarborough, 23; Bradford, 21; Leicester, 13; Manchester, 17; Darlington, 22; York, 25¼. The high consumption per head in York was, in the Board's opinion, caused partly by waste. They gave their customers a constant and unlimited supply, and they did not think it unreasonable to ask them not to waste it. He moved that dividends for the past half year be declared at the following rates per annum: On the preference shares of 1876, 5 per cent.; on the preference shares of 1896 and 1900, 3½ per cent.; on the ordinary shares, 10 per cent.; and on the ordinary shares of 1878 and 1879, 7 per cent. The motion was adopted.

PROJECTED INTERNATIONAL GAS EXHIBITION AT THE CRYSTAL PALACE.

As some of our readers are already aware, arrangements are in progress for holding an international gas exhibition at the Crystal Palace from the 14th of December next till the 11th of January, 1902. It will comprise exhibits from the United Kingdom, the Continent, Canada, Australia, and the United States; and they will be grouped in eight principal classes: (1) Gas Lighting, Ordinary and High Pressure; (2) Light and Heat; (3) Meters, Ordinary and Slot; (4) Testing Apparatus; (5) Heating and Cooking Apparatus; (6) Gas Plant, &c.; (7) Materials used in Gas Manufacture; and (8) Gas-Engines. In connection with the exhibits in class 5, it is proposed to have lectures and demonstrations; and samples will be shown of ordinary, hotel and restaurant, and artistic cookery and confectionery, for which prize medals and diplomas of merit will be awarded. The exhibits will occupy the south portion of the Nave of the Palace; and, according to the plan which accompanies the prospectus, it will be arranged in thirteen sections. It is intended to award gold, silver, and bronze medals, and certificates of three degrees of merit. These awards will be made by a Committee composed of well-known gas engineers and experts, a large number of whom have, we are informed, expressed their willingness to support the scheme. The preliminary list of patrons which has been issued contains the names of some representative members of the gas profession; among them being Messrs. Berridge, Canning, Colson, Foulger, Hack, Harman, Holgate, Irving, Parlby, Shadbolt, Tysoe, and Valon. The project is due to the initiative of Mr. T. G. S. Hersey, who organized a similar display at the Royal Aquarium in December, 1899; and the Secretary of the Exhibition (the head office of which is at No. 49, Victoria Street, S.W.) is Mr. C. Lapthorne—the General Manager being Mr. Henry Gillman.

The Corporation Water Engineer of Lincoln (Mr. J. H. Teague) has received an advance of £50 per annum in his salary.

MANCHESTER CORPORATION GAS AND ELECTRICITY SUPPLY.

At the Meeting of the Manchester City Council last Wednesday, the annual reports of the Gas and Electricity Committees, abstracts of which have already been given in the "JOURNAL," and the ordinary minutes of proceedings, were adopted without discussion. The most important matter referred to in the Gas Committee's minutes was a re-arrangement of the managerial staff, rendered necessary by the death of Mr. W. Rodger. In accordance with the recommendations of a Special Sub-Committee, the following appointments, some of which have been noticed in our "Personal" column, have been made: Mr. J. R. Hill, Deputy-Manager of the Rochdale Road station, to be Manager at Bradford Road; Mr. John Taylor, Clerk of Works at Bradford Road, to be Deputy-Manager at that station, Mr. E. W. S. Parker, the Chemist, to take charge of the working of the carburetted water-gas plant there; Mr. A. Woodward, Assistant-Chemist at Rochdale Road, to fill a similar position at Bradford Road; Mr. J. S. Naylor, Deputy-Manager at Bradford Road, to be Manager of the Rochdale Road station; and Mr. G. W. Tooley, the resident foreman at Rochdale Road, to be Deputy-Manager. It is estimated that these arrangements will effect a saving of £103 a year. There was also on the *agenda* a recommendation by the Electricity Committee that the price of electric energy should be raised by ½d. per unit to all consumers—the advance to take effect from the 29th prox.; but the consideration of the proposal was adjourned till the next meeting. In a report submitted to the department by the Secretary, it was stated that they estimated a deficiency on revenue account of £504 at the end of the current year's working, which sum would have to be taken from the reserve fund. The amount at present in that fund was only £13,172; whereas the Provisional Order sanctioned the setting aside for reserve of a sum equal to 10 per cent. of the expenditure, which would have allowed the fund at March last to stand at £86,329. In view of the heavy capital outlay on works and mains, the amount that would be required during next year for interest and the sinking fund was estimated at £76,178, or an increase of £20,000 on the figure for the current year. It must be remembered that a large proportion of the money spent on extensions could not become remunerative for the first two or three years. But, in the meantime, the interest and sinking fund charges must be provided for; and in order that the Committee might be in a position to meet these obligations, it became necessary to increase the present charges for current by ½d. per unit as and from Michaelmas next. This proposal, if adopted, would increase the receipts for the year ending March 31, 1902, by about £11,000. Instead of building up the reserve fund to the extent allowed by Parliament, large sums, amounting in the aggregate to £52,963, had been paid over to the city fund in aid of the rates; and reductions had been made from time to time in the prices charged for current. There was little doubt that the last change was uncalled for, as it was well known that for several years past considerable difficulty had been experienced in meeting the growing demands of the public for current. The effect of lowering prices under such circumstances had been to still further increase the applications for supplies, and at the same time to multiply the difficulties experienced in trying to meet the extra demand. Notwithstanding the fact that the public had known for some months past that it was unlikely that new consumers could be supplied with current during the present year, the number of applications now on the books awaiting connection was equivalent to 52,353 8-candle lamps.

NEWCASTLE-UNDER-LYME GAS UNDERTAKING.

Speaking on the annual accounts of the Gas Department at a recent meeting of the Newcastle-under-Lyme Town Council, Mr. W. L. Elliott, the Chairman of the Committee, said at the time the financial statement was made last year, he had his doubts as to whether the succeeding year would be so successful. Fortunately they had had an even better year. This had arisen through the very large increase that had taken place in the price of coke. In the first place, the rise in the cost of coal had made a difference to them on the year of £3325, while the increase in the price of gas had only brought them in £2627; so that, without the increase in the price of residuals, they would have had a loss on the year of £700. Coke had brought them an increase of £1480, and tar and liquor £250. The total increase from gas and the sale of residuals was £4307, against an increased price of coal of £3325, or an advance of nearly £1000 on the previous year. During the past year, out of the profits £1250 had been spent on the extension of a retort-house, and improvements in the old portion; over £500 had been expended on new mains; close upon £500 had been spent on new meters; and 188 new gas cooking-stoves had been fixed, all having been done entirely out of revenue. The payments on account of sinking fund and interest for the year amounted to £4350. This, with the items he had given previously, and a deficit which had been discovered in the late cashier's cash book of £924, left them with a balance of £150 to carry forward to next year's account. The sinking fund now amounted to more than £10,000. It was somewhere about twenty years since the gas-works were taken over by the Corporation. At that time the total production was about 54 million cubic feet a year; but within the last year, the make of gas had been 112 million cubic feet. The increase in the consumption of gas had been far more rapid during the past three or four years than during the first sixteen or seventeen years that the Corporation owned the works. During the last few years, it had increased at the rate of 34 millions per annum, as against 22 millions in the previous years. This was to be accounted for by the working classes taking up the use of gas cooking-stoves, and a more general use of gas through the slot meter, which was the Gas Committee's greatest source of increase. When the gas-works were taken over twenty years ago £74,000 was paid for them. To-day they had a capital of £90,000; and more than double the out

put of gas. The capital charges per 1000 feet were gradually decreasing; and if the Committee continued to follow the plan adopted during the past three or four years, of paying for all extensions out of revenue, there was no doubt that in two or three years' time the town would reap increased benefits. The sinking fund had been increased during the past year by something like £1600, and next year, through the investment of the sinking fund, he was looking forward to an increase on that account of something like £1700 or £1800. If they continued to pay off the works account, besides paying out of revenue for all extensions, and also paying for the public lighting of the town, which to-day would have cost about £1250, there was very little more to be expected. With reference to the discrepancies in the late cashier's cash book, he might say that this was at the present time under the Committee's consideration. There was no doubt that, if the audit of the accounts had been what it ought to have been, the sum he had mentioned would not have been deficient. When they considered that the deficiency commenced in 1894, and had gone on year by year up to recently, there was no doubt that the Auditors ought to have found it out before now, and called the attention of the Committee to it. Proceeding to forecast the result of the ensuing year's working, Mr. Elliott could not say it was quite so hopeful as was the outlook twelve months ago. There had certainly been a decrease in the price of coal, but this would only make a difference of something like £1300. Against this there was no doubt they would have a decrease in their income from coke, and quite as large a decrease, if not larger, from the two other residuals, tar and liquor. According to the contracts, they would have a deficiency on these accounts, as compared with last year, of something like £500. Therefore, if they were to be as successful next year as they had been in the past year, it would have to be made up by a greatly increased consumption of gas. It was impossible for him to say what the growth would be, but during the last two months, June and July, the increase had averaged something like 16 per cent. If this rate continued, or only half this rate, during the other portions of the year, probably they would have as good a balance at the end of the year as they had at the end of last year. Alderman Heath seconded the motion, which was adopted.

The Corporate common seal was affixed to agreements for the supply of 5500 tons of unwashed nuts during the ensuing year at 12s. 10d. per ton.

SALFORD CORPORATION GAS SUPPLY.

The Past Year's Working.

In their report on the working of the gas undertaking in the past year, the Gas Committee of the Salford Corporation state that, notwithstanding the advance in the price of gas, and the very mild weather prevailing during the past winter, the business continues to grow; the percentage increase for the year ended March 31 last being equal to 0·69. The coal and cannel carbonized amounted to 150,088 tons; and the quantity of gas made was 1,550,058,000 cubic feet, of an average illuminating power equal to 19·51 candles—the parliamentary standard being 18 candles within the borough, and 17 candles in the out-districts. The great increase in the price of coal was only partially met by the extra charge of 2d. per 1000 cubic feet in the price of gas. The receipts from the sale of coke were somewhat higher; but, unfortunately, there was a serious falling off in the market values of tar and sulphate of ammonia during the year. The works and plant, under the supervision of Mr. W. W. Woodward, the Gas Engineer and Manager, were maintained in a thoroughly efficient condition. Business in cookers and prepayment meters continues very satisfactory. The accounts accompanying the report show that the revenue from the sale of gas was £164,483; stove-rentals produced £2323; and the sale of residuals, £58,349—the total income being £225,487. The expenditure on the manufacture of gas was £141,117; on distribution, £9977; and on management, £6150—the total expenses being £171,339. Bad debts to the amount of £446 were written off; leaving a balance of £53,702 to go to the profit and loss account. The amount standing to the credit of this account at the close of the financial year was £54,950. Out of it were taken the following amounts: Interest and annuity, £17,992; redemption of loans, £13,392; depreciation, £8000—leaving a balance of £15,566 as the net profit for the year, transferred to the district fund account.

BURY CORPORATION GAS AND WATER AFFAIRS.

The Borough Auditors of Bury, reporting upon the finances of the Corporation Gas Department for the year ending March 31 last, state that the revenue account showed a profit on the working of £14,163, £9495 of which has been applied in meeting the charges for interest (£3341), dividend (£1491), and sinking and redemption funds (£4663)—leaving a disposable balance of £4667. A moiety of this—£2333—has been carried to the credit of the general rate, and the remaining moiety is to be applied to the reduction of the price of gas.

Regarding the water undertaking, the Auditors mention that, under the provisions of the Bury and District Water Act, 1900, this department of the Corporation vested as from April 1, 1900, in the Joint Water Board; and it is provided by section 34 (1) that the Board shall pay to the Corporation in part consideration for the purchase of the undertaking (as the amount contributed by the general rate for sinking fund on the water-works, with interest thereon to March 31, 1900), the sum of £100,563 2s. 7d. This sum is owing by the Water Board to the Corporation, and is payable at six months' notice. There is a further amount of £48,612 14s. 5d. contingently due by the Joint Board to the Corporation, with compound interest at 3 per cent. thereon to date of payment; but as this sum is payable out of the clear profits of the water-works, its payment is postponed until the undertaking yields a surplus revenue.

The Chairman of the Omagh District Council (Mr. N. Lynch) has given notice of a motion for the next meeting as to applying for a Provisional Order for the purchase of the gas-works.

STOCKPORT CORPORATION WATER SUPPLY.

The Kinder Scheme to be Commenced.

At the Meeting of the Stockport Town Council last Wednesday, the minutes presented by the Water Committee set forth that they had passed the following resolutions: (1) That the first instalment of works, consisting of the Kinder reservoir and other works referred to in clause 26 of the Stockport Corporation Water Bill, 1901, be proceeded with at the earliest possible time, and that the necessary steps in regard to the acquisition of the lands and easements required be taken as soon as the Bill receives the Royal Assent. (2) That Mr. James Mansergh, President of the Institution of Civil Engineers, be engaged as Engineer to carry out the first instalment of the works, subject to terms and conditions to be embodied in an agreement, and that the remuneration for the services to be rendered by him be a commission of 5 per cent. for engineering on the actual cost of construction, and a commission of 10s. per cent. for quantities, &c., on the estimated cost, or accepted tenders, the Corporation providing a Resident Engineer and the necessary inspectors. (3) That the Chairman and Engineer be deputed to see Mr. Mansergh with a view to fixing a limit to the amount upon which commission shall be paid to him at the rate of 5 per cent. Alderman Lees moved the adoption of the minutes, and made the following statement with regard to the new scheme: The portion of the Kinder scheme which it is proposed to commence immediately will afford a supply of 2 million gallons of water per day for the district. It consists of the Kinder reservoir, which will hold 624 million gallons, and will be formed by a dam 114 feet high and 1100 feet long, about a mile above the junction of the Rivers Kinder and Sett. The water will extend up the valley towards the downfall more than half-a-mile, and also up the other adjoining valleys of William Clough and Broad Clough. There will be filters with filtered-water tanks at the foot of the Kinder dam, to deal with the 2 million gallons per day, for supply; a 26-inch main from the tanks to a service reservoir at Disley to hold 2 million gallons; a 27-inch main from this reservoir to Hazel Grove, where it will be connected to the existing mains; a 15-inch main to Alderley Edge, at such an elevation as will supply efficiently all that district; a small oil-engine near the reservoir, to pump water for the higher portion of Disley; and a 6-inch pipe from this pump to a service reservoir, holding 300,000 gallons, on Higher Disley. He explained that the parliamentary estimate of the first instalment of the works, the construction of which it was proposed to undertake immediately, amounted to £328,931, exclusive of engineering expenses and contingencies, which were put at £49,439, and land for reservoir sites, &c., at £11,000. This estimate was prepared when the market prices of the various materials were considerably higher than now, so that unless it should turn out that the trench for the embankment had to be carried to a much greater depth than the geological advisers of the Committee considered would be necessary, or some other unforeseen event should add to the cost of the work, there was every reason to believe that the estimate would not be exceeded. Mr. Morley criticized the scheme, which he opposed because, in his opinion, there was no need for rushing it. The Kinder site was now secured, and there was a surplus of 900,000 gallons per day—enough to last for 22 years; and this quantity could be increased to last 30 or 40 years. Manchester in two or three years' time would have an extra daily supply of 13½ million gallons on hand from Thirlmere, and would want customers for it. Why, then, should not Stockport become those customers? There was no need to commence the Kinder scheme. After a long discussion, the minutes were adopted with one dissentient.

SOUTHPORT WATER-WORKS TRANSFER.

The purchase of the undertaking of the Southport Water-Works Company by a Joint Board, comprising the Southport Town Council, the Birkdale Urban District Council, and the West Lancashire Rural District Council, is virtually accomplished. The Transfer Bill has passed both Houses of Parliament, and only awaits the Royal Assent. An agreement has been drawn up and accepted, according to which the purchase price is approximately £850,000—£740,000 actual, £16,000 the Company's overdraft taken over by the Board, £71,000 of 5 per cent. debenture stock, and an allowance of (say) £23,000 for the costs of the Bill, the Company's opposition, compensation, and the purchase of stores in stock. The transfer is to take place on March 31, 1902. During the last three years, the net profits have, it is stated, amounted to about £23,000 per annum. It is arranged that the whole of the purchase-money will be paid over to the Company, less the £71,000 in respect of debenture stock, which is transferred to the Board; but the Board will issue new stock guaranteed by the rates of the respective Local Authorities, and shareholders will be given the option of either taking cash or the new stock. On an average, the shareholders will get nearly £30, or new stock to the amount of £30 at 3 per cent., for every £10 share. The purchase is satisfactory to both sides.

The history of the Water Company is almost like a romance. In 1854, it was formed in a modest way with a capital of £16,000 in shares, and mortgage powers up to £4000; the area of supply including the townships of Birkdale and Scarisbrick. In 1856, an extension of capital of £20,000 and of borrowing powers for another £5000 was obtained. In 1867, the capital was increased by another £40,000, and the borrowing powers by £10,000; and the area of supply was added to by the inclusion of Aughton and Halsall. In 1870, additional capital to the amount of £70,000 and further borrowing powers of £17,500 were obtained. In 1878, the area of supply was again enlarged—Formby, Maghull, Lydiate, and Downholland being added. New share capital to the extent of £150,000 was also obtained, and further borrowing powers of £37,500. The Bill to sanction this was vigorously opposed by the Southport Corporation, who at that time wanted to purchase the undertaking; but the strong point against them was that if they had done so the districts in the added area would not have obtained the supply of water of which they stood in urgent need. The next

stage in the history of the Company was the Act of last year, by which the capital was increased by £40,000. As none of this has been expended, it will not, of course, be taken into consideration; so that the amount of the capital for the purpose of the present Bill and purchase is £300,000, with borrowing powers to the extent of £85,000.

ELECTRIC LIGHTING NOTES.

There is a net loss of £1256 on the Electricity Department of the West Ham Corporation for the six months ended March last, mainly due, it is said, to the increase in capital charges and the reduction in the price of current from 3d. to 2d. per unit.

A fire was discovered on the morning of the 4th inst. in St. Swithin's Lane, where a "joint-box" belonging to the City of London Electric Lighting Company, Limited, was found to be in flames. According to the official report of the Fire Brigade, the fire was caused by the defective circuit of the electric wires. The main was much damaged, as well as the box.

In dealing with the affairs of the City of London Electric Lighting Company in our "Electric Lighting Memoranda" on the 30th ult., it was stated that there had been a considerable decrease in the number of public lamps supplied by the Company. We learn, however, that this was not so, but that there was an actual increase of one arc lamp supplied by the Corporation in 1900, compared with 1899.

The Colchester Town Council have received the sanction of the Local Government Board to the borrowing of £15,825 for electric lighting; but they "are not prepared to authorize the borrowing of the sum of £75 required for payment to the Borough Engineer, as it would not accord with their usual practice to allow payments to salaried officers of local authorities to be made out of loan moneys."

Complaint is still being made by residents in the vicinity of the Exeter Corporation electricity works of the nuisance caused by the emission of dense smoke from the chimney. It is a good many months since this complaint was first heard. Then the excuse was that smokeless coal could not be procured because of the strike of colliers. Though Welsh coal is now obtainable, it does not seem equal to the needs of the case; and another sort of coal is to be used.

The electric lighting works for Worksop are practically completed; and the Contractor has given a dinner at a local inn to celebrate the event. At this dinner, the Chairman of the District Council (Mr. J. T. Shardlow) was present, and in proposing success to the scheme, he praised the Contractor for the manner in which he had executed his work, praised the Council for having undertaken it, and then expressed his conviction that, in three or four years, the concern would be a paying one, and "would help considerably to reduce the ordinary burdens of the ratepayers."

The minutes relating to the Belfast Corporation Electric Lighting Department for the quarter ending June 30 contain some interesting figures. The output of current was 170,815 units; being a total increase of 44 per cent. on the output over the corresponding period of 1900. The current used for motor purposes showed an increase of 91 per cent.; and the current for lighting an increase of 29 per cent Of the current sold for lighting purposes, only 11 per cent. was charged at 6d. per unit, while 89 per cent. was charged at 2d. per unit. Of the current sold for motor purposes, 15½ per cent. was charged at 3d. per unit, and 84½ per cent. was charged at 1½d. per unit.

In the annual report of the Electrical Engineer of Croydon, it is stated that, during the year, the capacity of the station had been increased from 2520-horse power to 4320-horse power; the addition consisting of one 800-horse power engine and alternator, and (for tramways) two 500-horse power engines and generators. The number of lamps connected has also increased from 45,122 8-candle power lamps to 59,241 lamps; being an addition of 14,119 lamps. The average price to those under the maximum demand system of charging was 4·241d. per unit; a figure which compared very favourably with other Metropolitan undertakings. The number of consumers on March 25 last was 793, compared with 595. The number of private lamps connected was 55,998, as against 42,389; and of public lamps 3243, compared with 2733. The cost of production per unit was 1·98d., as against 1·875d.; the increase being due to the extra price of coal.

The Borough Auditors of Bury have issued their report on the Corporation accounts for the year ending March 31 last. Regarding the Electric Light Department, they state that, after charging interest and sinking fund, the revenue account for the year shows a loss of £657, which is charged to the general rate. The further expenditure on capital account during the year has been £5585, which, added to the amount previously spent, £40,715, gives the total cost of works, &c., to March 31, as £46,300. Observing that the question of the rapid depreciation of electrical plant has been engaging the attention of other boroughs, the Auditors suggest for the consideration of the Corporation whether a charge for depreciation should be included in the revenue account. They do not think it is at present necessary to do more than comply with the statutory requirements for sinking fund; but inasmuch as some important boroughs also charge depreciation, they thought it right to bring the matter before the Corporation.

At the meeting of the West Bromwich Town Council last Wednesday, the Electric Lighting and Power Committee reported that they had been waited upon by a deputation from the Tradesmen's Association, asking for a reduction in the prices charged for current for lighting purposes. After carefully considering the question, they recommended that the alternative charges during the summer months—that is, from April 1 to Sept. 30—should be on the basis of a flat rate of 4d. per unit, and, further, that the maximum demand system should be continued during the winter months (Oct. 1 to March 31) at the present rates. They also recommended that customers should be allowed the option of paying upon either the maximum demand or the flat-rate system during the summer quarters, by giving notice of such intention in April. A long discussion took place upon the report; it being contended that a rate of 3d. per unit should be charged all the year round, the present charges being too high. Eventually a motion to refer the matter back to the Committee was carried by 12 votes to 5.

The Corporation of Newcastle-under-Lyme two years ago obtained a Provisional Order authorizing the establishment of works for the supply of electricity for purposes of lighting and power, and the Corporation recently applied for an extension of time for another year. Messrs. Lacey, Clirehugh, and Sillar, the Consulting Engineers to the Corporation, have presented a report to the Electric Supply Committee, in which they claim that their estimates demonstrate that, even with a small demand, it is commercially possible to establish works on a remunerative basis at Newcastle. They recommend the low-tension system, and say that the best method would be to generate the electricity at a pressure of from 440 to 480 volts, and distribute it by means of the three-wire system, so that a consumer requiring a supply for lighting would receive 220 volts, and for power purposes 440 volts. This system would permit of a storage battery, and would be perfectly safe to handle. For so small a demand as that now contemplated, the Engineers consider that gas-engines would prove the most economical, but that when it increases considerably steam would be the most satisfactory. The estimates include mains along all the principal streets, with provision for extension in any direction. In the estimate of receipts, the price of electricity is taken at 6d. per unit. The capital expenditure with steam is £10,389; using gas at £8365. The working is assumed to cost (including interest and sinking fund) with steam £1487, and with gas £1381. The revenue is estimated at £1500. The report is under the consideration of the Committee.

A heavy loss has been incurred by the Kingston Corporation Electric Lighting Department in the past twelve months; and no matter how the position is looked at, it is a grave one for the ratepayers to contemplate. The revenue account shows that the receipts during the twelve months from the sale of current were £6562, as compared with £7512 for the fifteen months preceding. The expenditure during the year was £9283, as compared with £7559 for the previous fifteen months, so that the total deficit last year was £2721, which was just about equivalent to a 4d. rate. A reference to the detail figures shows that the cost of coal alone went up from £2407 in the previous fifteen months to £4236 last year. It would be interesting to have the difference allocated between the requirements for the greater business done and the rise in the price of coal. Then there was a considerable increase in management expenses and in interest and repayment of loans. Seeing that large extensions were made during the past year, it may be expected that the current year will disclose an even greater charge in the latter respects. The works cost of the current per unit sold last year was 4·353d., as against 2·608d. in the preceding fifteen months—the remaining items of expenditure averaging 2·844d. per unit, as against 2·359d. The result of the year's working shows that the revenue derived was equal to 5·09d. per unit sold, while the cost was 7·197d., or a loss of about 2d. on every unit. This is, of course, without giving credit for the amount paid off capital, which totalled to £1461. If this is eliminated, there remains a dead loss of 1d. per unit. There is a healthy growth in the number of consumers, who now reach a total of 376—an increase of 65 during the year, while the number of lamps connected totals 18,899—an increase of no less than 2769. The total number of units supplied was 308,860. The revenue summary shows that the total deficit on the works from the date of their establishment in 1893 has been £8680. Of this amount £6463 represents repayment of capital.

Mr. F. Brown was until recently one of the Elected Auditors of Croydon; but in an election a short time since he was displaced by Mr. Courtenay Wells. However, he has not retired from his position without giving the ratepayers a little light on the Corporation finances, particularly in connection with the Electric Lighting Department. The report which he has published deals with the accounts for the year ending March 25 last; and his comments on the figures relating to the electricity undertaking are as follows: "Nothing has been charged against this department for the clerical and other work done at the Town Hall. A sum of £7500 has been transferred from the debtor of the revenue account to the credit of the general district rate account; £5385 12s. 10d. being for interest, and £2114 7s. 2d. as sinking fund. I would point out that these are arbitrary amounts. Further I would bring before your notice that while there is no legal necessity to charge against profits more than interest charges and sinking fund instalments, yet I think the burgesses should have brought before them most clearly that, in my opinion, the depreciation is very much greater than the amount of the sinking fund, and that if, instead of the electric lighting being a Corporation department, it had been a company having the privilege to borrow money at, say, 3 per cent., the trading would, in my opinion, after writing off sufficient depreciation, show a heavy loss." The publication of the report of which this is part has raised the ire of some of the town councillors; but Mr. Brown justifies his action by reminding the objectors that he is not a servant of the Corporation, but was elected by the ratepayers. Consequently it is his duty to make a report to his employers, and not to the Corporation only. Naturally, at the last meeting of the Council, the Electric Lighting Committee could not allow the report to pass unnoticed. Alderman Miller, who made a speech which was in large part inaudible to the Press, was understood to say that, in his view, if the Company had worked the electric light on the lines of the Corporation, they would have paid a dividend of 5 per cent. and have carried forward a sum of £5000. Alderman Foss held that it was not fair to call upon the Electric Light Committee to charge depreciation on the whole of the works until they were properly carried out. When the works were brought to fruition, then would be the time for the Council to lay down a hard-and-fast rule as to depreciation. The present was not the time to consider and discuss the question of depreciation. Referring to the allocation of a portion of the salaries of the clerical staff at the Town Hall, he said this was not done in any of the other departments. He agreed that, when the electric light was a money-making concern, they ought to charge clerical expenses against it. Mr. Brown is to be given an opportunity of explaining his report in its entirety at a meeting of the Council; and, when he does so, perhaps he will throw in a few more remarks on the question of depreciation in connection with the electrical works, which is one in which the "JOURNAL" has been particularly interested.

The salary of Mr. E. Onions, Gas Manager to the Loughborough Corporation, has been advanced by £50 per annum.

NOTES FROM SCOTLAND.

From Our Own Correspondent.

Saturday.

The Corporation of Dunfermline have received from Mr. R. Cockburn Millar, C.A., of Edinburgh, the Burgh Auditor, a pronouncement which, coming from one of such wide experience, will have almost the authority of a judicial finding. He was consulted by the Gas Committee upon the legality of the practice of meeting capital expenditure out of revenue; and his advice was that to a considerable extent it was quite legitimate. By doing so, he said, they were adding to the capital value of the undertaking; and the necessity for writing off for depreciation did not arise. The Committee decided to adopt Mr. Millar's view, and continue the practice. They have been in the habit of applying £1500 annually out of revenue to capital purposes. The position of matters is this: The price paid for the gas undertaking five years ago was £97,361; and since then the capital expenditure incurred has amounted to £7373—making a total capital expenditure of £104,734. But having applied £6622 of revenue to capital purposes, they have reduced the capital account to £98,112, or little more than the original cost. There is, however, an overdraft at the bank of £2166, and in respect of this circumstance, when the Committee's recommendation came before the Council, some of the members expressed the opinion that, if they went on as they were doing, they would be obliged either to increase their capital or else borrow money. One of them said that so long as they kept the works in the perfect state in which they were, they did not need to write off for depreciation; but that if they went into capital expenditure for extensions and not mere renewals, they would require to borrow money. This opinion was quite in accordance with Mr. Millar's, which was only "to a considerable extent." Of course, an extension of works of any magnitude would require additional capital to be raised, but such extensions as the laying of a few hundred yards of mains, or the building of an extra oven to the retort-bench, if there be revenue to meet it, may, according to Mr. Millar, be legitimately paid for out of it. The gentleman seemed to have somewhat mixed notions on the subject, because he said "not mere renewals." He seemed to forget that the cost of renewals is an expenditure which must be made out of revenue. To place it to capital would not be good finance. Mr. Millar's advice was adopted by the Town Council. I expect to find it followed by other corporations than Dunfermline. While not detracting from the soundness of the policy thus recommended and adopted, I would point out that it may be carried so far as to lead to trouble. If existing plant be not sufficiently attended to—that is to say, if revenue be applied to such an amount in the extension of the works as not to leave sufficient for necessary renewals—the works will depreciate, and a day of disaster will come. The question of the necessity for a depreciation fund is one which I know exercises many minds. The case of Dunfermline throws light upon it, backed up as the practice of the Commissioners there is by the authority of a responsible Auditor. But it also brings out forcibly how desirable it is that there should be a fund—depreciation or contingent—out of which to draw when necessity arises.

The Corporation then considered the estimates for the current year, which had been prepared by the Engineer (Mr. A. Waddell). These brought out a revenue of £17,587, and an expenditure of £15,437—leaving a surplus of £2150. The Gas Committee recommended that the price of gas be fixed at 3s. 6d. per 1000 cubic feet—a reduction of 5d. There was strong opposition to this, in the form of an amendment to the effect that the price should be 3s. 4d. At this figure, it was contended, there would still be a surplus of £1500 at the end of the year; and if the consumption of gas went up, it might be £2000. It was further contended that it was improper to tax the community with £2000 more than was necessary, and that it was the duty of the Corporation to fix the price of gas so that the revenue and expenditure would, as nearly as could be estimated, balance each other. For the Committee, it was argued that if they were to contribute £1500 out of revenue to capital, they could not do that and wipe out the debit balance of £2166 if they reduced the price of gas so far as proposed. The Committee's recommendation was adopted by 15 votes to 4. It was certainly the right one, because if, in the course of the year, it is found that too much money is being made, the Corporation can easily reduce the price of the gas.

In the estimates of Mr. Forbes Waddell, which were submitted to the Town Council of Broughty Ferry this week, it was stated that the expectation is that the consumption of gas during the current year will increase from 56 to 62 million cubic feet. With the price retained at 2s. 6d. per 1000 cubic feet, it is expected that the revenue from gas will amount to £7560; that tar and sulphate will yield £850, as compared with £480; and that coke will produce £1516, as compared with £2237. The total revenue is expected to be £9973. On the expenditure side, it is estimated that coal will cost £3457, as compared with £5355; and benzol £560. Including £103 for depreciation of stores, and £996 to wipe off a debit balance, the total estimated expenditure is £16 more than the revenue. It was pointed out that, owing to the fall in the price of coal, it would be possible to pay off the deficit without raising the price of the gas. The Manager had estimated the price of coke at 8s. per ton, which, considering that they were at present selling it at from 10s. to 15s. per ton, was very low. The estimates were adopted; and the price of gas was retained at 2s. 6d.

The Town Council of Newport on Monday adopted the Burghs Gas Supply Acts, as a step towards acquiring the undertaking of the Gas Company. As I have already stated, the transfer has been arranged amicably, upon the principle of splitting the difference between the value of £10,072 put upon the undertaking by Mr. J. M'Gilchrist, of Dumbarton, for the Corporation, and the £11,120 put upon it by Mr. A. Yuill, of Alloa, for the Company. The price agreed upon is £10,500. In moving the adoption of the Acts, Mr. Thom said that the Company had acquired land upon which they were to erect an entirely new works; and they had already constructed a gasholder which was capable of supplying more than the present consumption of gas. He thought this was an exceedingly appropriate time for their acquiring the gas

GAS AND WATER COMPANIES' STOCK AND SHARE LIST.

Referred to on p. 389.

Issue.	Share.	When ex. Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p.c.	GAS COMPANIES.			£ s. d.
590,000	10	Apl. 12	10½	Alliance & Dublin 10 p.c.	18½—19½	..	5 7 8
100,000	10	,,	7½	Do. 7 p.c.	13—14	..	5 7 2
300,000	100	July 1	5	Australian 5 p.c. Deb. .	100—102	..	4 18 0
200,000	5	May 15	6½	Bombay, Ltd.	6—6½	..	5 0 0
40,000	5	,,	6½	Do. New, £4 paid	4¾—4⅞	..	5 9 5
380,000	Stk.	Feb. 14	12	Brentford Consolidated	260—265	..	4 10 7
270,000	,,	,,	9	Do. New . . .	190—195	..	4 12 4
50,000	,,	,,	5	Do. 5 p.c. Pref. .	128—132	..	3 15 9
159,375	,,	June 14	4	Do. 4 p.c. Deb. .	111—114	..	3 10 2
220,000	Stk.	Mar. 14	10	Brighton & Hove Orig.	222—227	..	4 8 1
226,320	,,	,,	7	Do. A. Ord. Stk. .	155—160	..	4 7 6
1,022,500	Stk.	Feb. 27	5	Bristol, 5 p.c. max. .	121—123	..	4 1 4
420,000	20	Mar. 28	10	British.	41—42	..	4 15 3
50,000	10	Feb. 28	12	Bromley, Ord. 10 p.c. .	24—26	..	4 12 4
79,000	10	,,	9	Do. 7 p.c.	19—21	..	4 5 8
500,000	10	May 31	6	Buenos Ayres (New) Ltd.	8¾—9¼	..	6 9 9
220,000	Stk.	June 28	4	Do. 4 p.c. Deb.	94—97	..	4 2 6
150,000	20	July 17	8½	Cagliari, Ltd.	22—24	..	6 17 6
100,000	10	May 31	10	Cape Town & Dis., Ltd.	15—16	..	6 5 0
50,000	50	May 2	6	Do. 6 p.c. 1st Mort.	52—54	..	5 11 1
550,000	Stk.	Apl. 12	12	Commercial Old Stock	270—280	..	4 5 9
236,425	,,	,,	9	Do. New do. .	205—210	..	4 5 9
238,237	,,	June 14	4½	Do. 4½ p.c. Deb.	128—133	..	3 7 8
800,000	Stk.	May 31	9	Continental Union, Ltd.	158—163	..	5 10 5
200,000	,,	,,	7	Do. 7 p.c. Pref.	158—163	..	4 5 11
575,000	Stk.	Feb. 28	5	Crystal Palace Ord. 5 p.c.	120—125	..	4 0 0
60,000	,,	,,	5	Do. 5 p.c. Pref.	125—130	..	3 16 11
486,090	10	July 17	10½	European, Ltd.	19—20	..	5 5 0
354,060	10	,,	10½	Do. £7 10s. paid	14—15	..	5 5 0
15,079,885	Stk.	Feb. 14	4⅛	Gas-light and Coke	4 p.c. Ord. . . .	93—95	.. 4 12 7
2,600,000	,,	,,	3⅛		3⅛ p.c. max. .	90—92	.. 3 16 1
3,799,735	,,	,,	4		4 p.c. Con. Pref.	111—114	+1 3 10 2
4,063,425	,,	June 14	3		3 p.c. Con. Deb.	91—93	.. 3 4 6
70,000	10	May 31	8	Hongkong & China, Ltd.		13—14	.. 5 14 4
3,800,000	Stk.	May 15	10	Imperial Continental .		207—210	.. 4 15 3
473,600	Stk.	Feb. 14	3½	Do. 3½ p.c. Deb. Red.		100—102	.. 3 8 8
561,000	Stk.	Feb. 28	10	Liverpool United A		236—238	+1 4 4 0
678,100	,,	,,	7	Do. do. B		172—176	.. 3 19 7
306,083	,,	June 28	4	Do. do. Deb. Stk.		118—120	.. 3 6 8
75,000	5	June 14	4	Malta & Medn., Ltd. .		4¼—5	.. 4 0 0
560,000	100	Apl. 1	5	Met. of Melbourne	5 p.c. Deb.	106—109	.. 4 11 9
250,000	100	,,	4½		4½ p.c. Deb.	103—105	.. 4 5 9
541,920	20	May 31	3½	Monte Video, Ltd. . .		9—10	.. 7 0 0
717,946	Stk.	Aug. 9	8½	Newc'tle & G'tesh'd Con.		226—227*	.. 3 14 11
312,855	Stk.	June 28	3½	Do. 3½ p.c. Deb.		97—99	.. 3 10 8
150,000	5	May 15	8	Oriental, Ltd. . . .		7¼—7⅝	.. 5 3 3
135,000	5	,,	8	Do. New, £4 10s. pd.		6¼—6⅝	.. 5 6 8
15,000	5	,,	8	Do. do. 1879, £1 pd.		1¼—1⅝	.. 4 11 5
						*Ex. div.	

Issue.	Share.	When ex. Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p.c.	GAS COMPANIES.			£ s. d.
60,000	5	Feb. 28	7	Ottoman, Ltd. . . .	5⅞—6⅛	..	5 12 0
851,070	10	Apl. 26	7	River Plate Ord. . .	10⅞—11⅛	..	6 4 5
250,000	Stk.	June 28	4	Do. 4 p.c. Deb..	96—98	..	4 1 8
250,000	10	Mar. 28	8	San Paulo, Ltd.. . .	10⅞—11⅛	..	6 19 1
135,000	Stk.	Mar. 14	10	Sheffield A	235—240	..	4 3 4
209,984	,,	,,	10	Do. B	235—240	..	4 3 4
523,498	,,	,,	10	Do. C	235—240	..	4 3 4
5,761,885	Stk.	Feb. 14	5	South Met., 4 p.c. Ord.	125—128	..	3 18 2
1,547,965	,,	July 17	3	Do. 3 p.c. Deb. . .	90—93	..	3 4 6
380,940	Stk.	May 15	5	Southampton Ord. . .	106—111	..	4 10 1
70,825	,,	July 17	4	Do. 4 p.c. Deb.	104—109	..	3 13 5
120,000	Stk.	Feb. 28	6	Tottenham and Edmonton	A. 5 p.c.	115—120	.. 5 0 0
250,520	,,	,,	4½		B. 3½ p.c.	85—90	.. 5 0 0
182,380	10	Jan. 16	5	Tuscan, Ltd.. . . .	8—9	..	5 11 1
149,900	10	July 1	5	Do. 5 p.c. Deb. Red.	95—100	..	5 0 0
230,000	5	Feb. 28	9	West Ham, 10 p.c. . .	9—10	..	4 10 0
147,000	10	,,	6	Do. 7 p.c. . .	11⅝—12⅜	..	4 16 0
128,984	Stk.	June 28	4	Do. 4 p.c. Deb.	103—108	..	3 14 1
				WATER COMPANIES.			
780,599	Stk.	June 28	11	Chelsea, Ord. . . .	285—290	..	3 15 10
150,000	,,	,,	5	Do. 5 p.c. Pref. .	150—155	..	3 4 6
160,000	,,	,,	4½	Do. 4½ p.c. Pref. '75	137—140	..	3 4 4
175,785	,,	Mar. 28	4½	Do. 4½ p.c. Deb. .	140—145	..	3 2 1
1,720,560	Stk.	Apl. 12	7	East London, Ord.. .	187—192	..	3 12 11
654,740	,,	June 14	4½	Do. 4½ p.c. Deb. .	143—148	..	3 0 10
980,169	,,	,,	3	Do. 3 p.c. Deb. .	94—96	..	3 2 6
700,000	50	June 14	8	Grand Junction	10 p.c. max..	102—105	.. 3 16 2
310,000	Stk.	Mar. 28	4		4 p.c. Deb..	123—127	.. 3 3 0
708,000	Stk.	Feb. 14	14	Kent		280—290	.. 4 16 7
160,000	,,	,,	7	Do. New, 7 p.c. max..		200—205	.. 3 8 4
1,043,800	100	June 28	10½	Lambeth, 10 p.c. max..		260—270	.. 3 17 9
406,200	100	,,	8	Do. 7½ p.c. max..		200—205	.. 3 18 1
350,000	Stk.	Mar. 28	4	Do. 4 p.c. Deb..		123—126	.. 3 3 6
500,000	100	Feb. 14	13¾	New River, New Shares		395—400	.. 3 8 9
1,000,000	Stk.	July 31	4	Do. 4 p.c. Deb..		125—130*	.. 3 1 7
902,300	Stk.	June 14	6	South-wark and	Ord. . . .	172—177	.. 3 7 9
126,500	100	,,	6		7½ p.c. max.	162—167	.. 3 11 10
489,200	Stk.	,,	5		5 p.c. Pref. .	147—152	.. 3 5 9
1,019,585	,,	Apl. 12	4	Vauxhall	4 p.c. A Deb.	123—128	.. 3 2 6
1,155,066	Stk.	June 14	10	West Middlesex. . .		263—268	.. 3 14 8
200,000	,,	,,	4½	Do. 4½ p.c. Deb..		138—143	.. 3 2 11
200,000	,,	Mar. 14	3	Do. 3 p.c. Deb. .		95—98	.. 3 1 3
						*Ex. div.	

supply. They had a large field before them, among residents who use oil-lamps and in the development of gas-cookers. In a general remark, Mr. Thom said it was recognized that, where corporations had taken over local lighting, the work had been done more efficiently and economically. Out of 243 gas-works in Scotland they had information regarding 204, and of these there were 43 owned by Corporations, who supply gas at an average price of 3s. 7½d. per 1000 cubic feet, and 161 owned by Companies, who supply at an average price of 5s. 7½d. This is a casuistic form of reasoning to which I can scarcely subscribe. In the first place, it assumes that company management is more costly than corporation management, which is not by any means accepted as truth; and in the second place, it is eminently unfair to strike the average prices in the way Mr. Thom does, because all the larger gas undertakings, supplying the cheaper gas, are in the hands of corporations, while few of the smaller ones, whose gas is dear, have been acquired by municipalities. The argument, however, served its purpose. It will now be Mr. Thom's duty, as he will have opportunity, to show in practice the application of his theories regarding gas supply.

In the Small Debt Court at Wishaw on Thursday, an action was brought by the Gas Commissioners of the burgh against one David Milne, for £6 3s. 8d. It was stated for the Commissioners that the defender had secretly made a connection with the gas-pipes belonging to the burgh, and had been burning gas without the knowledge of the Commissioners for the past seventeen years. The defender was not present; and decree was given for the sum sued for, with expenses. No wonder need be entertained that the man was ashamed to face a Court of Law. He should be thankful if he is not placed in the dock for his theft.

It is reported that there was a profit of £2924 upon the working of the Helensburgh Corporation Gas-Works for the past year, and that no change has been made in the price of the gas, which remains at 4s. 7d. per 1000 cubic feet. The debt upon the gas-works is £38,509; but as an asset it is considered to be far in excess of the liability upon it.

A new Gas Company have begun the erection of gas-works at Cowdenbeath. The work is being pushed forward rapidly, and the expectation is that gas will be supplied by the Company early in November.

On Wednesday forenoon, a fire broke out in the gas-works at Abbeyhill, Edinburgh, belonging to the North British Railway Company. The works are used for the manufacture of oil gas for the lighting of railway carriages. It is reported that the fire originated through an escape of gas catching a light, and that the flames got into the tubes leading from the retorts. From there it spread to the oil and tar tanks, the latter of which was outside the building. The damage done amounted to over £200—chiefly the loss of tar and oil. I presume that what is meant is that tarry matter had been leaking out of an ascension pipe, and it having caught fire, the flame got into the hydraulic main, and from there to the tanks. But the way it happened is not of so much consequence as the fact that it did, seeing that it is another lesson to those who use oil to be careful in the handling of it. It is so inflammable that the danger of fire arising is much greater with it than when coal is the material carbonized.

On Thursday of last week, Mr. Alex. Rennie, sole partner of the firm of R. & W. Rennie and Co., builders and contractors, South Cumberland Street, Glasgow, was examined in bankruptcy in the Glasgow Sheriff Court. There was a deficiency of £1895 on his estate, which he accounted for by the increase in the price of materials after he had taken contracts. He was contractor for part of the work of erection of the new gas-works at Provan for the Corporation of Glasgow, and upon that contract alone he lost about £1000.

This week the Lord Mayor of London and a party of Aldermen and Sheriffs of the City of London extended an official visit to Glasgow, chiefly to see the International Exhibition there. They were taken to the Trossachs, and were there shown by the Corporation of Glasgow the famous water-works of the city at Loch Katrine. I suppose I can scarcely say that this will have much effect one way or another upon the question of London's water supply. On the other hand, however, education is never thrown away upon intelligent learners, and it must have impressed the visitors greatly to see the simplicity of the vast arrangements whereby an unlimited supply of unfiltered water is obtained for a population of about a million people; and there may have been in the retinue some who have a voice in the matter of water supply for London, who may have obtained ideas that will be of service in the working out of water problems at home.

The cutting of the first sod in connection with the new water supply for the eastern district of Stirlingshire was performed on Saturday last; the Committee of the eastern district of the County Council attending, and afterwards dining in the Carronbridge Hotel. The reservoir is to be located on the Earls Burn, in the vicinity of Carronbridge, and about six miles west of Denny. The Earls Burn is a tributary of the Carron, and has an ample flow of water from an extensive gathering-ground directly on the opposite side of the Carron Valley from that of the Falkirk gathering-ground on the Fauchland Burn. The reservoir, which is No. 1 contract—the other parts being in course of settlement—has been let to Messrs. Shanks and M'Ewan, of Glasgow, at £27,810. The supply is for a district using water which at the present time Dr. M'Vail, the Medical Officer of Health for the county, regards as "exceedingly bad." Most of it, he says, has nearly every defect that a water supply can have. The district to be supplied includes Polmont, Muiravonside, and Slamannan. It will take three years to construct the works.

Devonport Corporation and the Gas-Works.—At a meeting of the Devonport Town Council on Thursday, the Town Clerk (Mr. A. B. Pilling) stated that the Gas Committee were unable to present a report to that meeting on the position of affairs with reference to the purchase of the undertaking of the Devonport Gas Company. Negotiations are proceeding with the Admiralty and the War Office with regard to the supply of gas to the Government establishments; and the Committee thought it better to withhold their report until these are concluded. If the negotiations do not close satisfactorily before the expiration of the time necessary to pass the Bill, provision will, it is understood, be made for reference of the matter to arbitration.

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CURRENT SALES OF GAS PRODUCTS.

LIVERPOOL, *Aug.* 10.

Sulphate of Ammonia.—On the resumption of business after the holidays, the market developed more activity; and notwithstanding the fact that the week was a broken one, a fair business has been done. Though the demand was sufficiently large to enable makers to find an outlet for any parcels they have had for disposal, there has not been any material alteration in values, which remain at £10 10s. f.o.b. Hull and £10 12s. 6d. f.o.b. Liverpool and Leith for prompt delivery. The exports continue on a satisfactory scale; being to the end of July about 3250 tons in excess of those for the corresponding period of last year. For forward delivery, makers continue to maintain a firm attitude, their ideas of price being £10 17s. 6d. per ton, ordinary terms, f.o.b. Leith, and £10 15s., Beckton terms, for delivery up to the end of the year.

Nitrate of Soda remains firm at 8s. 9d. to 9s. per cwt., according to quality; and cargoes for late arrival are held for 9s. 3d. to 9s. 4½d. per cwt.

LONDON, *Aug.* 10.

Tar Products.—The markets are very quiet, doubtless owing to the holidays. A little business has been done in 90 per cent. benzol at 9½d. f.o.b. London for prompt shipment; but manufacturers still decline to sell for next year, believing in better prices. 50 to 90 per cent. is quoted at 9d. to 9½d. for delivery at outports in the North; but there is really no business doing. Solvent remains in the same depressed condition. No transaction of any importance has been reported for some little time. As regards anthracene, there is little chance of improvement. In fact, it is practically impossible to place anything for early delivery. It is generally believed that consumers are prepared to consider business for next year, but only in high percentages and "A" quality. Crude carbolic is, if anything, weaker. Business is reported in 60's at 2s. 1d.; but consumers now offer only 2s. for prompt or forward delivery. Crystals are slightly better, several of the parcels which were pressing on the market having been apparently disposed of. Makers are still sellers of 39-40's at 8d. Pitch continues firm, mainly for delivery in South Wales, where the fuel makers appear to be very short of stock. Tar oils are certainly weaker, especially as regards the North; and makers are anxious to clear out their stocks before the winter. As to tar, there is nothing fresh to advise—no contracts of any importance having recently been let.

The average values obtaining during the week are: Tar, 14s. 6d. to 18s. Pitch, east coast, 30s. 6d. to 31s.; west coast, 28s. to 28s. 6d. Benzols, 90's, 9¼d. to 9½d.; 50's, 9d. Toluol, 10½d. Crude naphtha, 4¼d. Solvent naphtha, 1s. Heavy naphtha, 10d. to 11d. Creosote, 1⅛d. to 1⅜d. Heavy oils, 2d. to 2⅛d. Carbolic acid, 60's, 2s. to 2s. 1d. Naphthalene, 60s. to 70s.; salts, 30s. to 40s. Anthracene, "A," 2¼d. to 2½d.; "B," unsaleable.

Sulphate of Ammonia.—The market is decidedly firm; but there is little or no business to report. The Gaslight and Coke Company continue sellers at £10 15s. August-December, but decline to quote for next year. There are still sellers in Leith at £10 12s. 6d. prompt; but buyers will not pay this price, and offer only £10 11s. 3d. As regards Hull, there is not much business doing—£10 10s. for prompt shipment being the outside value. For shipment from Liverpool, the demand continues very good. In more than one instance £10 12s. 6d. has been paid, and buyers are anxious to contract forward at this price Makers, however, hold off, believing in improved values.

COAL TRADE REPORTS.

Lancashire Coal Trade.—Business generally in the coal trade here continues to drag on very slowly, with stocks accumulating, notwithstanding that pits are scarcely running more than three to four days a week. A good deal of surplus round coal is offering on the market at low-cut prices for quick clearance sale. No very material change in the position is probable for the next two or three weeks; but in the meantime the principal collieries are holding to their quoted basis rates, which for house coal remain at about 15s. per ton at the pit for best qualities, 13s. to 13s. 6d. for seconds, 11s. to 11s. 6d. for common house coal, and 9s. to 9s. 6d. up to 10s for steam and forge coal. There is nothing further to notice with respect to the gas coal contracts; all the principal business being now practically settled on much about the basis quoted of late, with which colliery owners for the most part seem to be fairly well satisfied. This represents an average of 10s. per ton for unscreened, 10s. 3d. to 10s. 6d. for medium screened, and 10s. 9d. up to 11s. 3d. for best screened gas coals. The railway companies would scarcely appear to have covered all their requirements, as here and there extra quantities are being ordered from collieries beyond contract deliveries; and these are being supplied at current basis rates. The continued restricted production of slack gives a steady tone to engine fuel; and with supplies of the better qualities not over-plentiful on the market, Lancashire coalowners are able to get from 8s. to 8s. 6d. per ton for the best sorts, with common descriptions ranging from 6s. to 7s. There are, however, still much lower-priced slacks offering from other districts, at from 4s. per ton upwards; but with the present railway restrictions, it is becoming more and more difficult to push anything like quantities on the open market. Shipping continues quiet, with a good deal of common round coal offering at low figures—averaging about 10s. to 10s. 3d. per ton, and the better qualities 11s. to 11s. 3d., delivered at ports on the Mersey. For coke there is a good inquiry, with prices hardening. Best Lancashire foundry cokes are quoted at 24s. to 25s. per ton at the ovens, good washed Lancashire furnace cokes at 13s. to 13s. 6d., best washed Yorkshire furnace cokes at 12s. to 12s. 6d., and good unwashed cokes at 11s. 6d. and 12s.

Northern Coal Trade.—There is now very great activity in the northern coal trade, the demand being exceptionally good for the season. In the steam coal branch, best Northumbrian sorts are quoted from 13s. 6d. to 13s. 9d. per ton f.o.b.; and the collieries are for the moment pressed with work, though the occasional holidays of the

Liverpool Street Station, 5.45 a.m., Saturday, July 13th, 1901.

miners rather lessened the normal production. Steam smalls are steady at from 5s. 3d. to 5s. 6d. per ton. In the gas coal trade, a very strong demand is experienced. There is a large inquiry for forward delivery, more especially over the next few months—those who have made contracts naturally desiring to get as much coal away as possible during the time of the rebate on the coal duty; and there is now that growth in the home demand which begins with the lengthening of the nights, so that the gas coal production is well taken up. Best Durham gas coals are from 10s. 6d. to 11s. per ton f.o.b., though contracts are much lower. The coke trade is steady, best Durham coke for export being 17s. 6d. to 18s. per ton f.o.b. Blast furnace coke is 15s. 6d. to 16s. per ton at the furnaces. Gas coke is not very brisk, and 12s. per ton f.o.b. is still the medium price quoted.

Scotch Coal Trade.—The market is steady, with a fair demand for all classes. It has been agreed that the Conciliation Board be continued for six months from the 1st of August. The masters have proposed to reduce the miners' wages by 12½ per cent.—a proposal which the men's leaders have counselled them not to agree to—and the men are being balloted upon the subject. This is the cause of some anxiety as to the future. The prices quoted per ton f.o.b. Glasgow, are: Main 9s. to 9s. 3d., ell 10s. 3d. to 11s. 3d., and splint 10s. 3d. to 10s. 6d. The shipments for the week amounted to 224,455 tons—an increase of 71,482 tons upon the previous week, but a decrease of 3455 tons upon the corresponding week of last year. For the year to date, the total shipments have been 5,570,679 tons—a decrease upon the corresponding period of last year of 658,070 tons.

Reductions in Price.—The following reductions in price have been announced by Gas Companies: Chester, 3d.; Grangemouth, 5d.; Grimsby, 2d.; Kingston-on-Thames, 3d.; Poole, 2d.; Richmond, 4d.; and Wigton, 5d. The Urban District Council of Coleraine have notified their intention to make a reduction of 3d. per 1000 cubic feet.

Devonport Water Supply.—Some inconvenience has been caused at Devonport during the past week or two, owing to the curtailment of the water supply. Complaint was made at the meeting of the Town Council on Thursday that the service was discontinued without notice to the consumers. The Town Clerk declined to say that this was illegal, but explained that he had written to the Water Company on the subject, and pointed out the inconvenience and danger of an intermittent supply in a town like Devonport, where the water-carriage system is in general use. Mr. Gould, a member of the Council, suggested that two-thirds of the water received into the Company's leat was lost by leakage before the leat left the boundaries of Dartmoor. Mr. Francis, the Company's Engineer, has been interviewed with reference to the statement, and he admitted that, owing to evaporation and to leakage from the older portion of the leat on the moorland, there was considerable loss of water, with the result that the daily inflow is not sufficient to meet the full requirements of the population. A supply is, however, being afforded equal to 25 gallons per head, as against the normal supply of 32 gallons.

Local Government Board and the Water Scheme of Abertillery.—Early in May Mr. W. A. Ducat, of the Local Government Board, held an inquiry at Abertillery as to an application by the District Council to borrow an additional £4500 for the purposes of the water undertaking at Cwmtillery. Mr. Togarmah Rees, the Engineer, then stated that the original contract was for £15,623; but in consequence of unexpected difficulties, this amount had been greatly increased, and £22,597 12s. 6d. had been paid. The additional work he estimated at rather more than £4000. Within the past few days, a special meeting of the Abertillery District Council had been held to consider a reply from the Local Government Board, which stated that the Board could not at present sanction the loan, because it appeared there had been serious faults in design, and want of proper supervision in the construction of the reservoir. The Board also doubted whether any further loan could be obtained without a fresh Act of Parliament, and recommended that before any further expenditure was incurred a Water Engineer of eminence should be called in to advise the Council. Mr. Togarmah Rees was present, and dealt with the charges of the Local Government Board; and a resolution was adopted, with a few dissentients, expressing confidence in the Council's Engineer. It was also decided to accept the advice of the Board; and the Clerk was instructed to write to Mr. Baldwin Latham and Mr. Mansergh, as to their fees for examining the works and reporting on the water supply.

Manchester Chamber of Commerce and the Coal Question.—The following letter on the subject of the coal question was addressed to the First Lord of the Treasury by Mr. Elijah Helm, Secretary of the Manchester Chamber of Commerce, on the 2nd inst. The receipt of the letter has been acknowledged in terms which give some hope that the proposal of the Chamber will be favourably considered by His Majesty's Government:—"Sir,—On various occasions during the last few years, and especially since the extraordinary advance in the price of coal which occurred in 1900, questions have come under the consideration of the Board of Directors of this Chamber involving data with reference to the available supply of coal beneath the soil of the United Kingdom. The existing information on this subject is imperfect, confused, and largely conjectural. It is therefore, for many practical purposes, of little or no use. Moreover, the results of previous systematic investigations, whether public or private, are no longer of much service, because later discoveries of coal deposits, important changes in the modes of utilizing the mineral, the opening up of coal mines abroad, and the introduction of competing fuels or other instruments for the production of power and light, have further complicated what is known as the 'coal question.' I am instructed by the Board of Directors to express to you its opinion that the time has come when this question—one of obviously supreme national importance—should be again investigated with all possible thoroughness and efficiency; and respectfully to urge that His Majesty's Government should, with the least possible delay, take into consideration the appointment of a Royal Commission of inquiry into the subject of the available supply of British coal which can be economically utilized, and all cognate matters bearing upon the future industrial prosperity of this country."

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Winsford Gas-Works Transfer.—The Winsford District Council last Wednesday appointed a Committee to arrange for the transfer of the gas-works to the authority and its subsequent management. The difficulty as to the borrowing of the money required for the completion of the purchase has been overcome; the Ecclesiastical Commissioners being willing to lend £26,968. Probably this will be increased, as the Council are anxious to pay off the existing short loan.

Accrington and District Gas and Water Board.—The annual report of the Board shows a gross profit on the past year's working of £23,414, and a net profit of £8716. The receipts for gas were £1508 more, and for coke £1304 more, than in 1899-1900. The contract price of coal, however, is up, and as the price of tar is 8s. 9d. per ton down, it is estimated that an incubus of £5833 will be involved, which will be too heavy to be lifted during the current year's working, however economically it may be carried out. The gross profits on the water undertaking amount to £14,414; and the various payments in this department leave a deficiency of £3363, which will again have to be borrowed from the Gas Department.

Gas v. Electric Lighting at Woking.—A little difficulty has arisen between the Woking Urban District Council and the Electric Supply Company, owing to the former having entered into a contract with the Gas Company for lighting the town without formally giving the Electric Light Company three months' notice to determine their contract at the end of the current year. The Council had regarded the contract as at an end, as the Company had full information of the Council's intentions. A question was raised as to the lamp-standards; but these have now been purchased by the Council, who will proceed with the gas lighting, and leave the Electric Light Company to take whatever steps they may deem desirable for breach of contract. The work of lifting the cables is in progress.

New Joint-Stock Companies.—The New Export Incandescent Lighting Company, Limited, has been registered with a capital of £500, in £1 shares, to carry on the business of makers and fitters of, and dealers in, incandescent and other lighting fittings, &c. The Natural Gas and Power Company, Limited, has been formed with a capital of £8000 in £1 shares, to search for, and make borings and experiments for ascertaining the existence, nature, quantity, and workable quality of, natural gas, mineral oils, and minerals believed to exist under certain lands and hereditaments in Waldron and Heathfield, Sussex; and to carry on in Sussex and Kent or elsewhere the business of miners, suppliers of gas, oil, electricity, or other substance or power for lighting or heating, meter, pipe, and fittings manufacturers, engineers, &c. H. F. Docharty and Co., Limited, has been registered in Edinburgh as a private company, with a capital of £4000, in £1 shares, to carry on the business of H. F. Docharty and Co., gas and steam cooking and heating engineers, at 38, Montrose Street, Glasgow. A company has been registered, under the title of Hamor Lockwood and Co., Limited, with a capital of £40,000, to take over the business of manufacturing chemists, &c., carried on by Hamor Lockwood and Co. in Manchester and elsewhere.

New York Water Supply.—The consumption of water in Greater New York for the year 1900 averaged about 115 gallons per head for the 3,437,000 inhabitants shown by the national census taken in June of that year. Manhattan and the Bronx, or old New York, used about 133 gallons, and Brooklyn borough some 85 gallons.

Dewsbury Gas Supply.—From the annual abstract of accounts of the Dewsbury Corporation just issued, it appears that the income during the past financial year amounted to £37,962; this sum including £25,784 received for 172,253,500 cubic feet of gas; and £10,151 for products. The coal bill amounted to £13,614, compared with £9901 in the previous year. After meeting all expenses, there remains a balance of £4976.

Manchester Water Supply.—The shutting off of the water in Manchester each evening arouses general interest in the state of the city's supply. At this time last year it amounted to 3130 million gallons, which is equivalent to 76 days' supply. Early last week, notwithstanding the recent heavy rains and the saving effected by turning the water off, there were only 2021 millions, or sufficient for 49 days. It was not then considered likely that the quantity of water in store would be materially diminished beyond its present figure. There is no doubt that a serious percentage of the supply runs to waste, owing to defective taps and other fittings. On Thursday, a copious rainfall was registered at Longdendale; and the supply of water in the reservoirs was increased by 33 million gallons. The total stock at the close of the week was 1963 million gallons, equal to 48 days' supply, or one day's supply more than the Corporation possessed when the water was first turned off during the night.

The Coventry Corporation and the North Warwickshire Water-Works.—At the last meeting of the Coventry City Council, the Water Committee presented minutes in which it was stated that the Sub-Committee appointed to consider the question of acquiring that part of the water undertaking of the North Warwickshire Water Company within the area added to the city, recommended that the Corporation should give three months' notice to the Company to purchase the works, &c., and that the Council should be authorized to negotiate the purchase price, or, in default of agreement, to have it determined by arbitration. The minutes were passed, and the Mayor was authorized to affix the corporate seal to the notice. It may be added that the Company only obtained their Act in 1898, and the parishes they are empowered to supply are those of Foleshill, Stoke, Keresley, Corley, Binley, Exhall, Walsgrave-on-Sowe, and Wyken. A purchase clause was inserted, giving the Corporation power to buy any portion of the undertaking in any area afterwards added to the city; and the arbitrators, in determining the price to be paid by the Corporation, are not to make any allowance in respect of the prospective value of the undertaking after 1910. Water was found at Corley, and it had been carried to Keresley, Foleshill, and Stoke. In 1899, Coventry took over the populous parts of the two last-named parishes; and it is so much of the Company's rights there that are now proposed to be extinguished by purchase.

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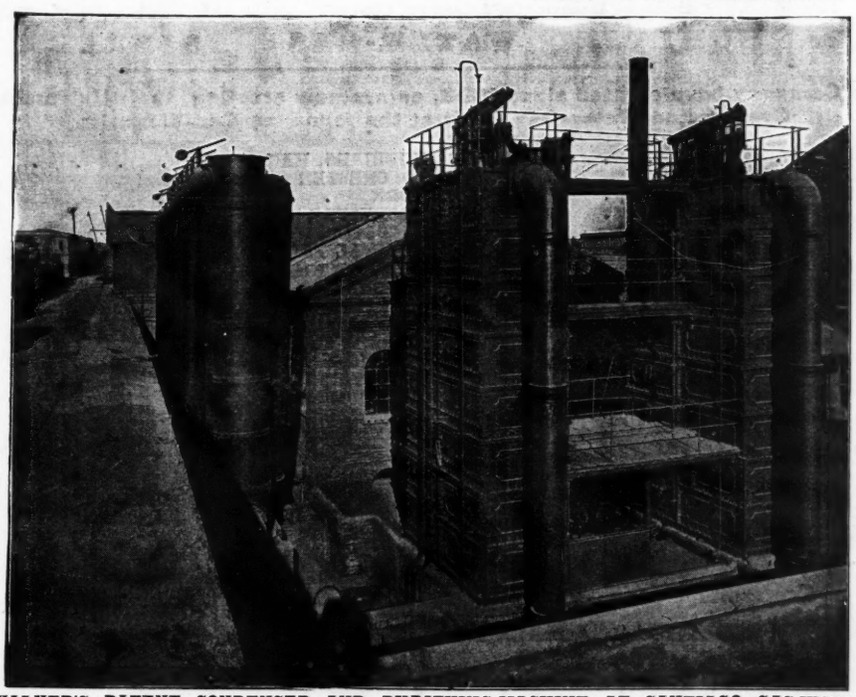

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Gas Explosion in Bristol.—Last Thursday, while five workmen were tunnelling a new sewer in the roadway through the premises of Messrs. Fry, in Bristol, there was an explosion of gas escaping from a main, accompanied by flames, which swept up the shaft. The men were at once pulled up, when two were found to be seriously burnt about the face and arms, and were taken to the Infirmary.

Proposed Alterations at the Teignmouth Gas-Works.—Several reports have lately been presented to the Teignmouth District Council on the condition of the gas-works. Some of these have been partly acted upon; but the works do not yet appear to have reached the condition in which they can be carried on with economy and profit. Mr. J. A. Gray, the new Manager, has prepared a report upon things as he finds them, and it has been laid before the Council. His principal recommendation is that the retort-house should be remodelled. He is of opinion that hundreds of pounds have been lost in the present house, and that the only way to put the works on a modern footing is to take out the present bench, and erect five beds of seven retorts on the shallow regenerator principle in its place. The cost of this he estimates at £1680, and the advantages will be a saving of 50 per cent. in the labour, the retort renewal, and fuel accounts, and an increase of from 800 to 1500 cubic feet in the yield of gas per ton of coal carbonized. The scrubber is inadequate, and Mr. Gray says it should be replaced by one of Walker's purifying machines, at an estimated cost of £650. The station meter should be overhauled; and other alterations are suggested—the total cost amounting to £2925. The annual amount required for interest upon, and the repayment of, a loan of this amount would be £180; and the economies which would result would be more than sufficient to pay this, while the producing capacity of the plant would be practically doubled, and the works placed on a businesslike footing. A cheap gas supply would do more to scare away the electric light bogey than anything else the Council could do. By the introduction of slot meters, they would bring gas to a class of consumers whom they had not yet touched. Mr. Gray was thanked by the Council for his able report, which was referred to the Gas Committee for consideration.

The offices of the Société Technique de l'Industrie du Gaz en France have been moved from 65, Rue de Provence, to 105, Rue Saint-Lazare, Paris. This will also, in future, be the address of the "Journal des Usines à Gaz."

The Gas Committee of the Bradford Corporation last Thursday placed contracts for gas and cannel coal for the ensuing year to the value of £120,000, at an average price of about 3s. 6d. per ton less than the contract price of last year.

At an inquiry recently held by Mr. W. A. Ducat, at the Burnley Town Hall, into an application by the Corporation to borrow £20,000 for gas-works purposes, the Town Clerk (Mr. A. S. Sheldon) explained that it was made up as follows: Mains, £6800; meters, £9000; lamps, £1200; and stoves, £3000.

The salary of Mr. W. Whatmough, Gas Engineer to the Heywood Corporation, has been increased by the Gas Committee by £50 per annum.

We learn from Mr. M. J. G. Ritchie, the organizer of the Twentieth Century Electrical Exhibition to be held at the Royal Aquarium, Westminster, for six weeks from the 16th of December next, that the project promises to be very successful; a considerable portion of the space to be allotted to it having already been secured.

Messrs. Joseph Taylor and Co., of Bolton, have received orders for, and have in hand, saturators of their latest makes, with detachable acid and ammonia pipes, lead lips for drainer mouth, and timber laggings, for the British Gaslight Company, the Stafford Corporation, the Basingstoke Gas Company, and the Armagh Gas Company.

The result of the Coroner's inquiry in connection with the fatality at Hackney Wick, caused by the escape of naphtha from the works of Messrs. Carless, Capel, and Leonard, to which reference has already been made in the "Journal," was a verdict to the effect that it was due to accident; but the Jury added a rider expressing the opinion that the underground system of storing petroleum spirit was not a proper one.

In the report of the Leeds Fire-Clay Company, Limited, for the year ending June 30 last, the Directors state that, after charging £8226 13s. 4d. for interest on debentures, and deducting the interim dividends paid, there remains a sum of £22,367. Out of this they propose to pay a dividend on the ordinary shares of 2½ per cent. for the past six months, which will absorb £10,000, and carry forward the balance of £12,367. The volume of trade done during the year was fully maintained; but the Directors regret that the net result, owing entirely to special causes, has not been so satisfactory as they could desire.

The half-yearly conference of the travellers and managers of the Richmond Gas Stove and Meter Company, Limited, was held from Tuesday to Friday last week, in Dublin. There were 25 gentlemen present when the chair was taken by Mr. E. W. T. Richmond, the Managing-Director, on Tuesday morning, supported by Mr. J. W. Glover (Messrs. George Glover and Co., Limited), and the Stratford and Warrington Directors (Messrs. H. M. Thornton and J. A. Ransome). The first day was entirely occupied in dealing with matters arising out of the Bournemouth conference last January. On the second day, the new patterns for the coming gas-fire season were inspected; and advertising schemes for the half year were submitted. On the third day, schemes for the development of the stove and meter departments of the business were considered, together with improvements suggested to present patterns. The final day was occupied with branch reports, travellers' sales for the year, and suggestions for increasing the Company's business in various departments. At the conclusion, Mr. Richmond distributed the prizes and bonuses earned to the close of the half year, amounting to nearly £60, and expressed the hope that he would have the pleasure of handing over three times this sum on the occasion of the next conference, to be held at Plymouth in January.

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OTTAWA	250,000
LINDSAY (Remodelled)	125,000
MONTREAL	500,000
TORONTO (Second Contract; Remodelled)	2,000,000
BELLEVILLE	250,000
OTTAWA (Second Contract)	250,000
BRANTFORD (Remodelled)	200,000
ST. CATHERINES (Remodelled)	250,000
KINGSTON, PA.	125,000
PETERBOROUGH, ONT.	250,000
WILKESBARRE, PA.	750,000
ST. CATHERINES (Second Contract)	250,000
BUFFALO, N.Y.	2,000,000
WINNIPEG, MAN.	500,000
COLCHESTER (Second Contract)	300,000
YORK	750,000
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LEICESTER	2,000,000
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BUENOS AYRES (RIVER PLATE CO.)	700,000
BURNLEY	1,500,000
KINGSTON-ON-THAMES	1,750,000
ACCRINGTON	500,000
TONBRIDGE	300,000
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(GAS DEPARTMENT.)

THE Gas Committee of this Corporation require an ENGINEER to take charge of the Manufacturing and Distributing Departments of their Undertaking.

The person appointed to the position will be required to devote the whole of his time to the duties; and he must be fully competent to design and carry out any alterations and extensions of Works and Plant.

Salary £450 per annum.

Applications, accompanied by *copies* of three recent Testimonials, to be sent to the Chairman of the Gas Committee, Town Hall, not later than Tuesday, the 3rd of September next.

Canvassing members of the Committee, either directly or indirectly, will be deemed to be a disqualification.

By order,
THOS. HUDSON,
Secretary.

Town Hall, West Bromwich,
Aug. 9, 1901.

OXIDE OF IRON OF FINEST QUALITY.

BALE'S Special Fire Cement should be used to keep Retorts, Furnaces, &c., in good repair during the heavy Winter Work.

Send for full Particulars to
BALE & Co., 120 & 121, NEWGATE STREET, LONDON, E.C.
Telegrams: "BOGORE, LONDON."
Telephone "277 HOLBORN."

SPECIAL PAINT FOR GAS-WORKS.

JOHN E. WILLIAMS AND CO.,
VICTORIA PAINT WORKS,
MANCHESTER.
Telegrams: "ENAMEL." National Telephone 1759.

SADLER & CO., Ltd., Middlesbrough, Tar Distillers and Tar Colour Manufacturers. BENZOL specially prepared for Gas Enrichment free from Sulphur. Pure Hydrated OXIDE OF IRON for Purifying Gas either for Sale or Lent on Hire. Always Buyers of GAS TAR and AMMONIACAL LIQUOR.

JOHN RILEY & SONS, Chemical Manufacturers, Hapton, near Accrington, are MAKERS of SULPHURIC ACID, from Brimstone, for Sulphate of Ammonia Making. Highest percentage of Sulphate of Ammonia obtained from the use of this Vitriol. References given to Gas Companies.

BY the adoption of Cripps's Bye-Pass VALVES inside your Purifiers, you can relieve the Back-Pressure in the Lower Tiers when the Purifying Material gets hard. They are extremely useful and economical.

Sole Makers: C. & W. WALKER, LIMITED, Midland Iron-Works, Donnington, near Newport, SHROPSHIRE.

THE Leeds Fire Clay Company, Limited, require for their Gas Engineering Department a competent Gas Engineer as OUTSIDE REPRESENTATIVE.

Applicants must be competent Draughtsmen and have thorough knowledge of Gas-Works Appliances and Plant, and have had experience in the erection of Inclined Retorts, Conveyors, and Gas Apparatus generally. Liberal Salary to suitable Man.

Apply, in writing, giving full Particulars of past Experience, Age, Salary, and References, to the above COMPANY, 20, Park Row, LEEDS, marked "Gas Engine r."

GAS EXHAUSTER for Sale very cheap. 100,000 cubic feet per hour.
HORN, Gray Street, WATERLOO ROAD, S.E.

GAS PLANT for Sale—I can always offer NEW and SECOND-HAND GAS APPARATUS, including Retorts and Fittings, Condensers, Exhausters, Scrubbers, Washers, Purifiers, Gasholders, Tanks, Valves, Connections, &c. Also a few COMPLETE WORKS. Compare Prices and Particulars before ordering elsewhere.

J. F. BLAKELEY Gas Engineer, Thornhill, DEWSBURY.

TO BE SOLD—

GASHOLDER (with Wrought-Iron Tank), 30 ft. by 12 ft. Cable Guided. New in 1895.
CENTRE-VALVE, 15 in. diameter, by Walker, for Four Purifiers.
Four PURIFIERS, 10 feet square, in line, with Planed Joints, Walker Centre-Valve, Covers, and Traversing Crab Lifting Gear. Will be refixed equal to new.

Write J. WRIGHT, Bridge House, BLACKFRIARS, E.C.

PURIFIERS FOR SALE.

IN consequence of Enlargement of Works, the Cranleigh Gas and Coke Company, Limited, invite TENDERS for two 6 feet PURIFIERS, 4 feet deep, and one CENTRE-VALVE for four Purifiers, with Connections complete.

The above will be sold as they stand, and can be seen at work on the Company's Premises. They must be removed as soon as the larger Purifiers have been erected.

H. J. HAYMAN,
Secretary.

TEIGNMOUTH URBAN DISTRICT COUNCIL.

THE Gas Committee of the above Council invite TENDERS for the purchase of their surplus TAR for the Year ending Sept. 30, 1902.

Tenders, endorsed "Tar," to be sent to the undersigned not later than Saturday, the 31st day of August, 1901.

J. ALEX. GRAY,
Gas Manager.

Teignmouth Gas-Works,
Aug. 7, 1901.

HAWORTH URBAN DISTRICT COUNCIL.

THE above Council are prepared to receive TENDERS for screened and unscreened GAS COAL, delivered on Rails at the Midland Railway Station, Haworth, for the period ending July 31, 1902. The number of Tons required is 2000.

Tenders to be forwarded to me, endorsed "Coal Tender," not later than Aug. 28, 1901.

WM. ROBERTSHAW,
Clerk.

North Street, Keighley.

TENDERS FOR COAL.

THE Directors of the Holyhead and North Wales Gas and Water Corporation, Limited, are prepared to receive TENDERS for the supply and delivery of COALS to their various Works for the ensuing Year.

Full Particulars and Forms of Tender may be had on application to the undersigned, to whom sealed Tenders, endorsed "Tender for Coal," must be sent not later than Twelve noon, Wednesday, Aug. 21, 1901.

GEORGE E. SAVILLE,
Managing Director.

Penmaenmawr,
July 9, 1901.

CORPORATION OF WARRINGTON.

THE Gas Committee of the above are prepared to receive TENDERS for the supplying and fixing of a WASHER-SCRUBBER to pass 1½ million cubic feet per day.

Also for the PURCHASE of a disused KIRKHAM WASHER, to pass 1 million cubic feet per day.

Full Particulars can be obtained from Mr. W. S. Haddock, the Gas Engineer.

Tenders to be sent not later than the 29th inst.

F. TAYLOR,
Secretary.

Gas Offices, Mersey Street, Warrington,
Aug. 9, 1901.

URBAN DISTRICT COUNCIL OF ELLESMERE.

ERECTION OF RETORT-BENCH AT GAS-WORKS.

THE Urban District Council of Elles- mere invite TENDERS for the erection at their Gas-Works, at Ellesmere, of a RETORT-BENCH of three Arches, three Regenerative Furnaces, and fifteen ○ Retorts, with Furnace Fittings, Bench Mountings, Subway, and Chimney.

The work to be carried out in accordance with Plans which can be seen, and Specification which can be obtained, on application to me, the undersigned.

Sealed Tenders, endorsed "Tender for Retort-Bench," to be sent to me not later than Wednesday, the 4th of September, 1901.

R. E. LLOYD,
Clerk of the Council.

1, Willow Street, Ellesmere,
Aug. 6, 1901.

COUNTY BOROUGH OF SALFORD.
(GAS DEPARTMENT.)

OXIDE OF IRON.

THE Gas Committee are prepared to receive TENDERS for the supply of 1030 Tons of OXIDE OF IRON PURIFYING MATERIAL.

Full Particulars may be obtained on application to the Gas Engineer, Gas Offices, Bloom Street, Salford.

Sealed Tenders, endorsed "Oxide of Iron," addressed to the Chairman of the Gas Committee, Town Hall, Salford, to be delivered to me not later than Three p.m., on Thursday, the 22nd of August, 1901.

The Committee do not bind themselves to accept the lowest or any Tender.

L. C. EVANS,
Town Clerk.

Town Hall, Salford,
Aug. 9, 1901.

LONDON COUNTY ASYLUM, HANWELL, W.

THE Sub-Committee of the above named Asylum are prepared to receive OFFERS for the purchase of TAR and AMMONIACAL LIQUOR for the Eleven Months ending June 30, 1902.

Terms: Cash on removal.

Forms of Tender, with estimated quantities for Sale, may be obtained on application to the Resident Engineer at the Asylum.

Tenders must be sent, in sealed covers, endorsed "Tender for Tar and Liquor," to the undersigned by or before Ten o'clock a.m., on Saturday, Aug. 17, 1901.

The Sub-Committee do not bind themselves to accept the highest or any Tender.

R. W. PARTRIDGE,
Clerk of the Asylum Committee.

London Asylums Committee Office,
6, Waterloo Place, S.W.
Aug. 9, 1901.

GLASGOW CORPORATION.
(GAS DEPARTMENT.)

PROVAN GAS-WORKS.

THE Corporation of Glasgow invite TENDERS for providing and erecting Two THREE-LIFT GASHOLDERS, with FRAMING, required in connection with their Provan Gas-Works.

The Drawings may be seen, and *copies* of the Specification and Form of Tender obtained, upon application to Mr. W. Foulis, the Engineer, at his Office, 45, John Street, Glasgow, upon payment of Two Guineas, which will be returned on receipt of a *bonâ-fide* Tender.

Sealed Offers, endorsed "Gas Department, Tender for Gasholders," must be lodged with the Subscriber on or before Tuesday, the 27th inst.

All Offers must remain open for acceptance for a period of Thirty days from the date thereof; and the Corporation do not bind themselves to accept the lowest or any Tender.

J. D. MARWICK,
Town Clerk.

City Chambers, Glasgow,
Aug. 6, 1901.

NORTH MIDDLESEX GAS COMPANY.

NOTICE is Hereby Given, that the ORDINARY HALF-YEARLY GENERAL MEETING of this Company will be held at No. 5, Great Winchester Street, Old Broad Street, London, E.C., on Wednesday, the 28th day of August, 1901, at Twelve o'clock noon, to receive the Report of the Directors and the Accounts of the Company for the Half Year ended the 30th of June, 1901, to declare Dividends, to increase the remuneration of the Directors, and for other purposes.

By order,
ERNEST L. BURTON,
Secretary.

Secretary's Office: 5, Great Winchester Street,
Old Broad Street, London, E.C., Aug. 8, 1901.

MANCHESTER CORPORATION GAS-WORKS.

TO CONTRACTORS.

THE Gas Committee are prepared to re- ceive TENDERS for the IRON and STEEL WORK required in the supply and erection of Four Purifiers, Staging, and Roof at the Rochdale Road Station.

Specification and Bill of Quantities can be obtained on application to Mr. C. Nickson, Superintendent, Gas Department, Town Hall, on payment of One Guinea, which will be returned on receipt of a *bonâ-fide* Tender.

Drawings may be seen on application to Mr. J. G. Newbigging, C.E., at his Office, Rochdale Road Station.

The Committee do not bind themselves to accept the lowest or any Tender.

Sealed Tenders, addressed to the Chairman of the Gas Committee, and endorsed "Tender for Purifiers," must be delivered at the Gas Offices, Town Hall, not later than Ten a.m. on Saturday, the 24th of August, 1901.

By order of the Gas Committee,
WM. HENRY TALBOT,
Town Clerk.

Town Hall, Manchester,
Aug. 7, 1901.

MITCHAM AND WIMBLEDON DISTRICT GASLIGHT COMPANY.
(INCORPORATED BY ACT OF PARLIAMENT, 1867.)

NOTICE is Hereby Given, that the SIXTY-NINTH ORDINARY HALF-YEARLY GENERAL MEETING of the Shareholders of this Company will be held in the Board-Room, at the Works, Mitcham, in the County of Surrey, on Tuesday, the 27th day of August, 1901, at Three o'clock in the Afternoon precisely, to receive the Report of the Directors and a Statement of the Accounts for the Half Year ended the 30th day of June last, to declare a Dividend, and for General Business.

The TRANSFER BOOKS WILL BE CLOSED from the 12th inst. until after the Meeting.

By order,
BENJAMIN GREEN,
Secretary and Manager.

Offices and Works: Western Road,
Mitcham, August, 1901.

TOTTENHAM AND EDMONTON GASLIGHT AND COKE COMPANY.

NOTICE is Hereby Given, that the ANNUAL ORDINARY GENERAL MEETING of the Proprietors of this Company will be held at the Company's Chief Office, 639, HIGH ROAD, TOTTENHAM, on Saturday, the 24th day of August next, at Three o'clock in the afternoon precisely, to receive the Report of the Directors, and Statement of Accounts for the Half Year ended the 30th of June, 1901, to declare a Dividend for the same period, and for the election of Two Directors and an Auditor for the ensuing Year, also for the transaction of General Business.

The TRANSFER BOOKS WILL BE CLOSED for the CONSOLIDATED STOCKS from the 10th to the 26th day of August, both days inclusive.

By order of the Board,
JAMES RANDALL,
Secretary.

Offices: Willoughby Lane,
Tottenham, Aug. 2, 1901.

BOGNOR GASLIGHT AND COKE COMPANY, LIMITED.

REYNOLDS & CO. have been favoured with Instructions to SELL BY AUCTION, at the Royal Norfolk Hotel, Bognor, on Thursday, Aug. 29, at 3.30 p.m. precisely,

500 SHARES OF £5 EACH,
IN THE
BOGNOR GASLIGHT AND COKE COMPANY, LIMITED,

being additional Capital authorized to be raised in pursuance of the Powers of the Bognor Gas Order, 1878.

For many Years past this Company have paid the Maximum Dividend allowed by the Act of Parliament; and the Consumption of Gas is rapidly increasing, and the General Business of the Company improving.

Particulars and Conditions of Sale may be obtained of Mr. W. HAMMOND, Secretary to the Company, at the Office of the Company, Argyle Street, BOGNOR; at the ROYAL NORFOLK HOTEL, BOGNOR; and of the AUCTIONEERS, 27 and 29, High Street, BOGNOR.

By order,
WM. HAMMOND,
Secretary and Manager

SALES BY AUCTION OF GAS AND WATER STOCKS AND SHARES.

MR. ALFRED RICHARDS begs to notify that his AUCTIONS of STOCKS and SHARES in London, Suburban, and Provincial Gas and Water Companies are held PERIODICALLY, at the Mart, Tokenhouse Yard, E.C.

He also undertakes the issuing by AUCTION of GAS and WATER STOCKS and SHARES under Parliamentary Powers.

Terms for issuing such Capital, and also for including Gas and Water Stocks and Shares in these periodical Sales, can be obtained on application at Mr. ALFRED RICHARDS' OFFICES, 18, FINSBURY CIRCUS, E.C.

NEWBATTLE CANNEL.

Highest Results in Gas, & Excellent Coke.

QUOTATIONS ON APPLICATION TO

THE LOTHIAN COAL COMPANY,
LIMITED,
NEWBATTLE COLLIERIES,
DALKEITH, N.B.

THOMAS DUXBURY & CO.,
16, DEANSGATE, MANCHESTER.
GAS ENGINEERS' AGENTS AND CONTRACTORS FOR
Meters, Fire-Clay Goods, Oxide of Iron, and all other Gas Apparatus. Retort Carbon purchased.
Inquiries Solicited.
Telegrams: "DARWINIAN, MANCHESTER."
Telephone 1806.

ROBERT MARSHALL,
CANNEL COAL MERCHANT,
97, WELLINGTON STREET, GLASGOW.

Prices and Analysis of all the Scotch Cannels on Application.

COKE-BREAKERS,
PRICES REDUCED.
(THOMAS & SOMERVILLE'S PATENT)
With Elevators and Conveyors worked by Steam or Gas Engine.

GEORGE WALLER & CO.,
165, QUEEN VICTORIA STREET, E.C.;
And at STROUD, GLOUCESTERSHIRE.

PREPAYMENT ATTACHMENTS
AND
ALL PARTS FOR GAS & WATER METERS.
Quotations to Samples.
THE
Tourtel Manufacturing Co., Ltd.,
146A, QUEEN VICTORIA STREET, E.C.

Can undertake the Largest Contracts.

UNEQUALLED.
Gas Companies are solicited to try Samples of the
MIRFIELD
BLACK BED GAS COAL.
Prices and Analysis on application.
MIRFIELD (GAS-COAL) COLLIERY COMPY.
RAVENSTHORPE, NEAR DEWSBURY.

JAMES OAKES & CO.
ALFRETON IRON-WORKS, DERBYSHIRE,
AND
Wenlock Iron Wharf, 21 & 22, Wharf Road,
CITY ROAD, LONDON, N.,
Manufacture and keep in Stock at their Works (also large stock in London)
PIPES and CONNECTIONS, 1¼ to 48 inches in diameter, and make and erect to order RETORTS, PURIFIERS and TANKS, with or without planed joints, COLUMNS, GIRDERS, SPECIAL CASTINGS, &c., required by Gas, Water, Railway, Telegraph, Chemical, Colliery, and other Companies.
NOTE.—Makers of HORSLEY'S PATENT SYPHONS. These are cast in one piece, without Chaplets; doing away with Bolts, Nuts and Covers, and rendering Leakage impossible.

HARDMAN & HOLDEN, LD.
ESTABLISHED 1820.
SULPHURIC ACID.
MADE from Spent Oxide (free from Arsenic) and of excellent Purity. Specially prepared for Sulphate of Ammonia Manufacturers.
Works: BLACKBURN; Miles Platting and Clayton, MANCHESTER.
Head Office: Miles Platting, MANCHESTER.
Inquiries Solicited.

WILLEY & CO., ENGINEERS, LONDON & EXETER.

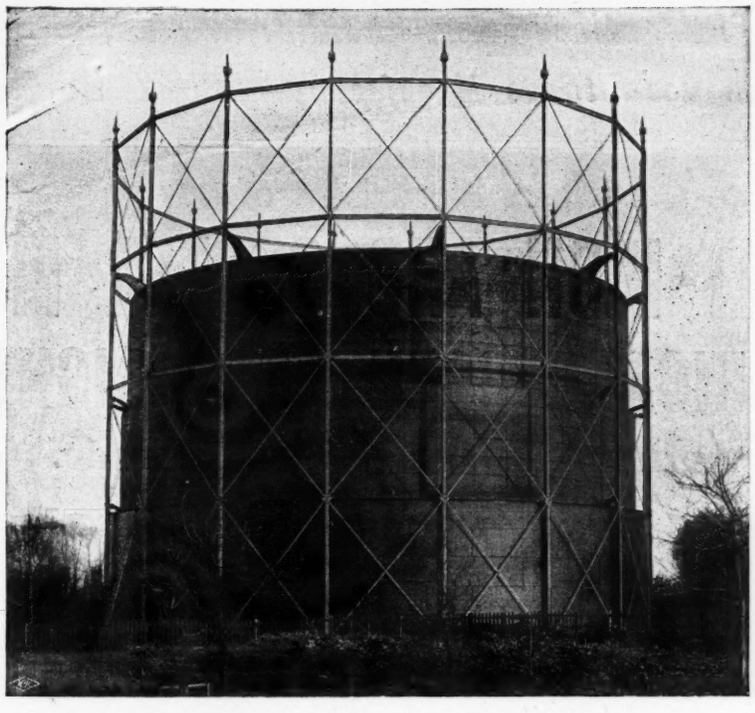
Telegrams: "WILLEY, EXETER." Telephone: 132 and 263.

GAS APPARATUS OF EVERY DESCRIPTION.

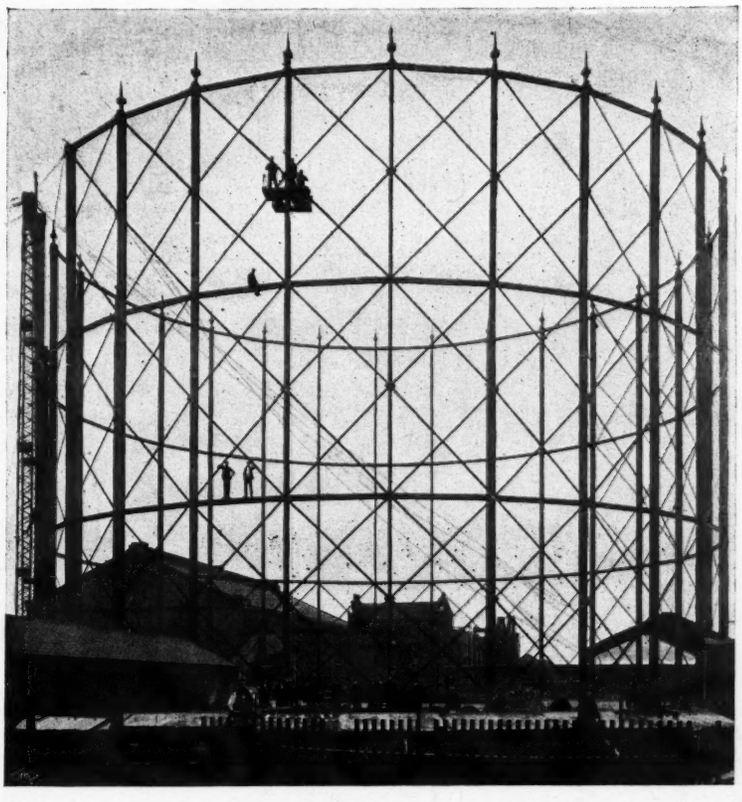
ENGINES, EXHAUSTERS AND FITTINGS.

Makers of IMPROVED WOOD GRIDS for PURIFIERS with OAK, CANE, or IRON BOLTS.

TYSOE'S SELF-SEALING MOUTHPIECES.



Three-Lift Gasholder and Steel Tank, 90 feet diameter by 14 feet deep, recently erected for the EPSOM GAS COMPANY.



Three-Lift Gasholder, 145 feet diameter by 35 feet deep, in course of construction for the WANDSWORTH & PUTNEY GAS COMPANY.

GASHOLDERS and TANKS.

RETORTS, PURIFIERS, CONDENSERS, SCRUBBERS.

GAS-GOVERNORS, STATION METERS CONSUMERS' METERS, PREPAYMENT METERS.

GAS-FITTINGS.

GAS-COOKERS.

LIVESEY WASHERS &c., &c.

Chief Offices and Works: ST. THOMAS, EXETER.

London Office: 18, ADAM STREET, ADELPHI, W.C.

EVERED & CO., LTD.,

27 TO 35, DRURY LANE, LONDON.
SURREY WORKS, SMETHWICK.
BARNET WORKS, BIRMINGHAM.

Brass Gas-Fittings Manufactory—SURREY WORKS, SMETHWICK.

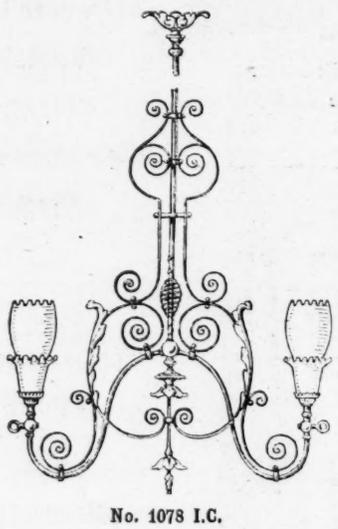
Wrought-Iron Gas-Fittings Manufactory—DRURY LANE, LONDON.

A New List of

WROUGHT-IRON AND COPPER FITTINGS
FOR INCANDESCENT GAS LIGHTING

is now being issued to the Trade.

We give below a few Examples.



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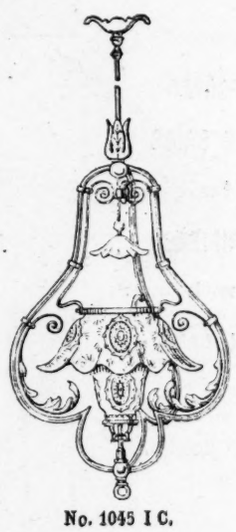
No. 1107 I.C.



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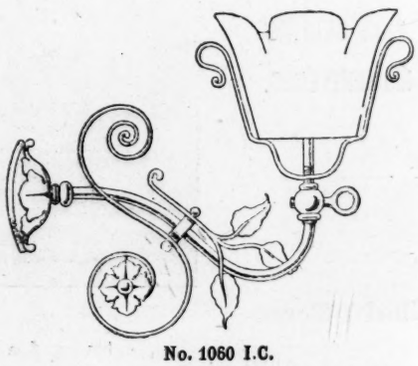
No. 1055 I.C.

No. 1111 I.C.



No. 1060 I.C.

EAST-END BRANCH: 143, HIGH STREET, SHOREDITCH.

GANDY'S BELTING

THE

GANDY BELT MANFG. CO., LTD.

Works: SEACOMBE, CHESHIRE.

BRANCHES:—

LONDON, NEWCASTLE, MANCHESTER, BRISTOL, GLASGOW, BIRMINGHAM, BRADFORD, BELFAST.

Registered Trade Mark.

THE ORIGINAL.

Don't be Misled!

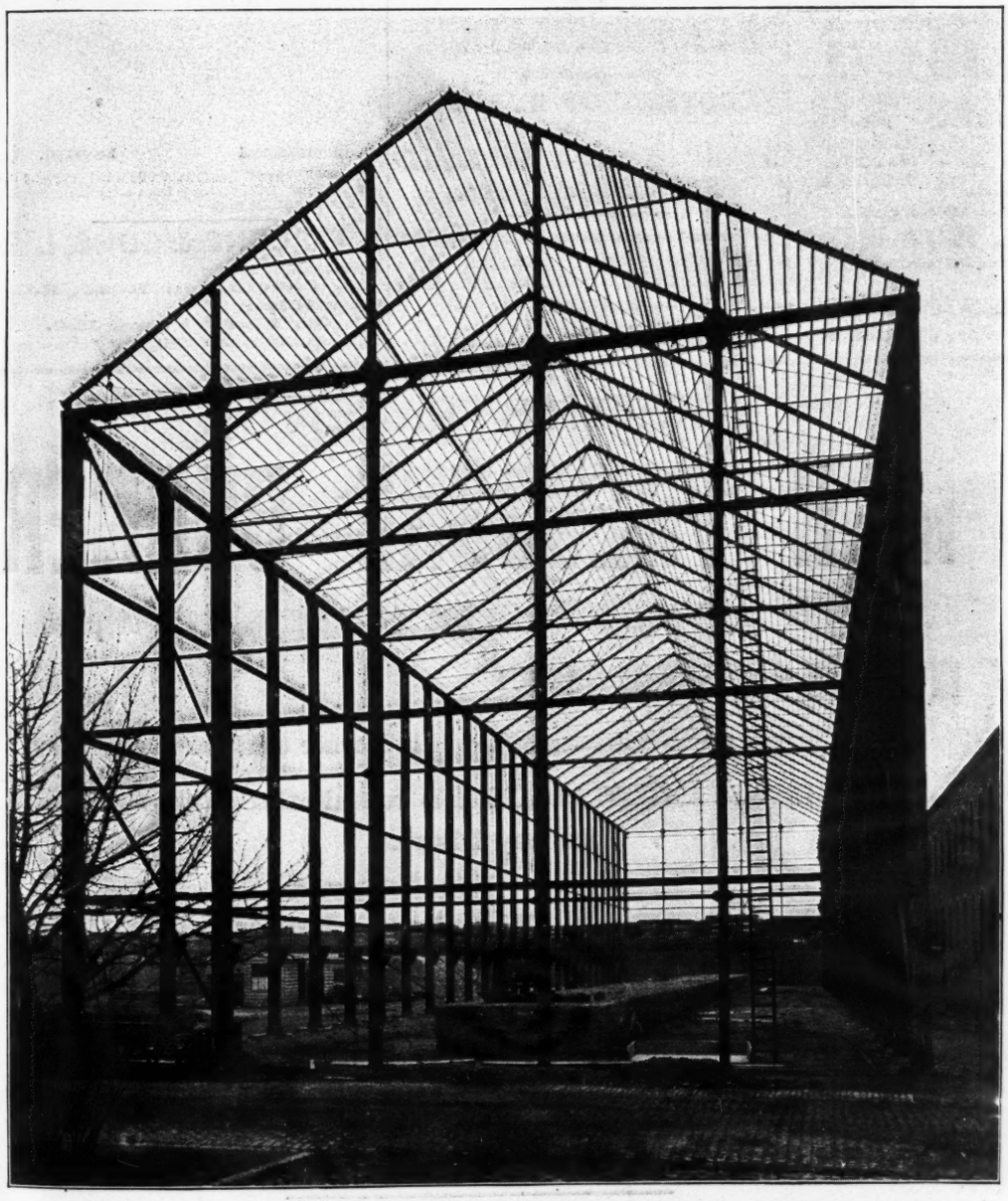
40 Awards!!

The World's Record!!!

LOOK FOR TRADE MARK.

WE MAKE A SPECIALITY OF ENDLESS BELTS FOR BLOWERS.

S. CUTLER & SONS, MILLWALL, LONDON.



EVERY KIND OF PLANT FOR GAS AND WATER WORKS. ROOFS. GIRDERS. TANKS, STEEL-FRAMED BUILDINGS.

STEEL RETORT-HOUSE RECENTLY ERECTED BY MESSRS. CUTLER.

GASHOLDERS. CARBURETTED WATER-GAS PLANT. OIL-TANKS.

Awarded HIGHEST MEDAL and DIPLOMA at the Newcastle-on-Tyne Royal Mining and Industrial Exhibition, 1887, for

CANNEL & COAL.

TYNE BOGHEAD CANNEL.

Yield of Gas per ton	13,155 cub. ft.
Illuminating Power	38·22 candles.
Coke per ton	1,301·88 lbs.

EAST PONTOP GAS COAL.

Yield of Gas per ton	10,500 cub. ft.
Illuminating Power	17·8 candles.
Coke	70 per cent.

SOUTH PELAW MAIN GAS COAL.

Yield of Gas per ton	10,500 cub. ft.
Illuminating Power	16·3 candles.
Coke	73·1 per cent.

For Prices and complete Analysis, apply to

THOS. W. DANCE, SON, & HUNTER,
COAL OWNERS, NEWCASTLE-ON-TYNE
OR
E. FOSTER & CO.,
21, JOHN STREET, ADELPHI, LONDON, W.C.

PRICE'S COKE & COAL BARROW

effects a great saving of time, labour, and expense.

For Particulars Price, &c., apply to Mr. EDWARD PRICE, "Langley," Wyke Avenue, WORTHING.

Prices are Reduced.

HYDRAULIC BLOWER

For blowing Air into Gas Purifiers for the purpose of

REVIVIFYING THE FOULED OXIDE.

Full Particulars on application.

LUXWERKE LUDWIGSHAFEN AM RHEIN.

WELDON MUD
FOR
GAS PURIFICATION,
For use in the
RECOVERY OF SULPHUR,
ALSO
Removal of last Traces of SULPHURETTED HYDROGEN in catch position.

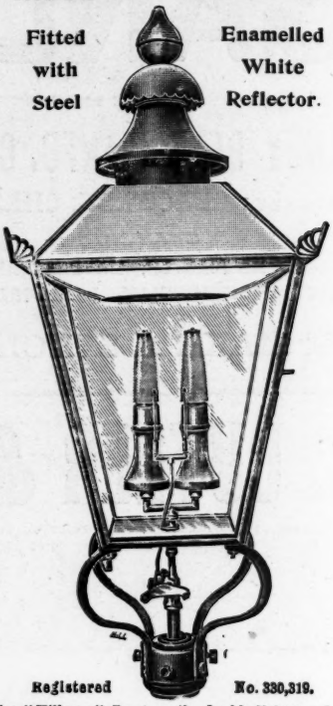
Full Particulars on application to the Patentees

GAS DESULPHURIZATION CO.,
— LIMITED, —
1, FENCHURCH AVENUE, LONDON, E.C.

THE
"KILBURN" LANTERN.

Fitted with Steel

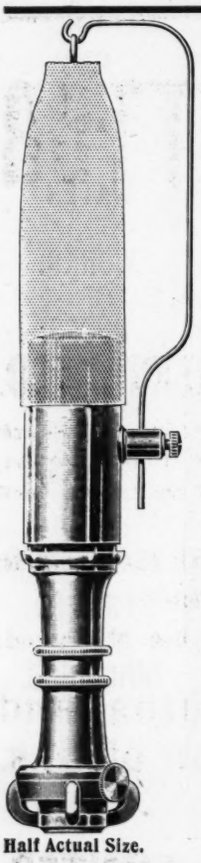
Enamelled White Reflector.



Registered No. 330,319.

The "Kilburn" Lantern (for double lights) and the "St. Albans" Lantern have been adopted for lighting the Town of St. Helens.

H. GREENE & SONS, LTD.
Works and Show Rooms:
19, Farringdon Road, E.C.
Registered Offices:
36, Mark Lane, E.C.
Telephone: 2669 AVENUE. Telegrams: "LUMINOSITY."



Half Actual Size.

KEITH'S PATENT

HIGH PRESSURE BURNER

Has already been largely adopted by the leading Gas Companies and Corporations.

IT GIVES THE BEST LIGHT.

More Candle Power than any H.P. Burner using 10 ft. per hour.

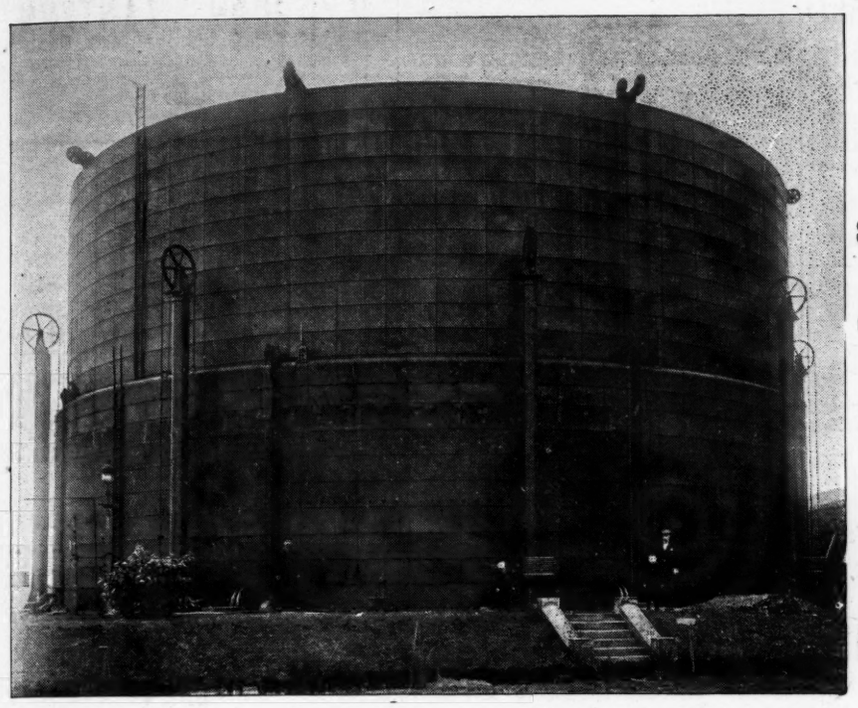
CAN BE INSTANTLY ADJUSTED to suit the quality of Gas in any District.

The Mantle is Removable. This Burner has been SPECIALLY MADE for High-Pressure Work.

For full Particulars see "Journal of Gas Lighting," March 12, 1901.

Quotations for complete Lighting Installations, Compressors, Burners, Lanterns, and all Fittings upon application.

THE WATER MOTOR & AUTOMATIC LIQUID ELEVATOR COMPANY, Ltd.,
27, FARRINGDON AVENUE, LONDON, E.C.



INNER LIFT ADDED TO A SINGLE-LIFT GASHOLDER,

80 ft. diameter by 24 ft. deep. Both Lifts Cable-Guided. Counterbalance to Outer Lift on old Columns.

KIRKCALDY GASLIGHT COMPANY.

(From a Photo.)

PATENTEES AND MANUFACTURERS:—

ASHMORE, BENSON, PEASE, & CO., LTD.,

STOCKTON-ON-TEES.

THE MAXIM PATENT CARBURETTOR

FOR ENRICHING GAS IN BULK.

PREVENTS NAPHTHALENE DEPOSITS.

OVER 100 MAXIM PATENT CARBURETTORS HAVE NOW BEEN FIXED.

Among the Companies and Towns supplied are The Gas Light and Coke Company, The South Metropolitan Gas Company, Birmingham, Leeds, Rochdale, Bristol, Sheffield, Southport, Alloa, Broughty Ferry, Dunfermline, and many other Works, both large and small, where they have been working in some instances for the past **Seven Years.**

MORE GAS & SALEABLE COKE PER TON of COAL CARBONIZED is PRODUCED; SAVING CAPITAL, LABOUR, FUEL, WEAR & TEAR, &c.

THE ENRICHMENT IS INSTANTANEOUS AND PERMANENT.

The Carburettor is inexpensive, easily fixed, and entirely supersedes the use of Cannel.

Dealers in Benzol, Carburine, and all other Naphthas and Oils suitable for the Enrichment or Production of Gas.

For Prices and full Particulars, apply to

THE GAS LIGHTING IMPROVEMENT COMPANY, LIMITED,

18, DEVONSHIRE STREET, BISHOPSGATE, LONDON, E.C.

TROTTER, HAINES, & CORBETT, LIMITED,
Brettell's Estate
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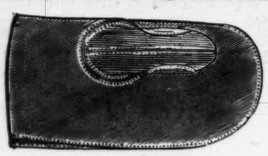

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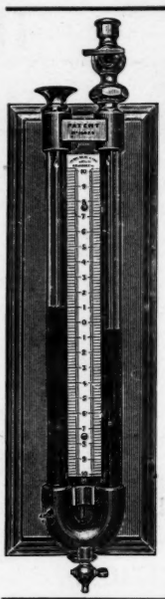

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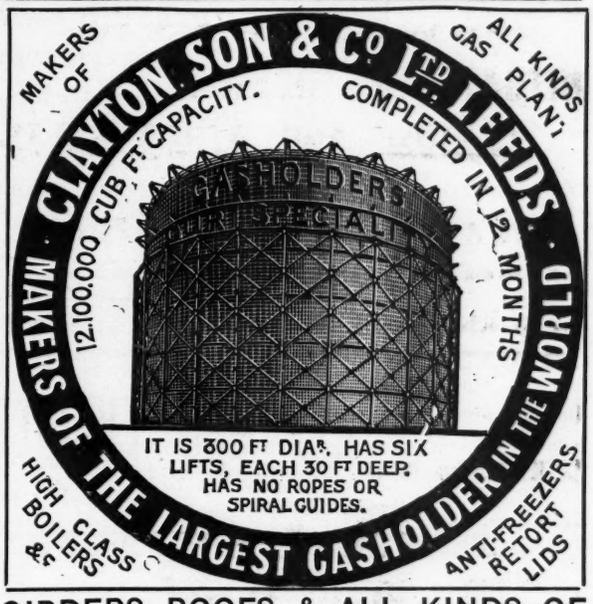
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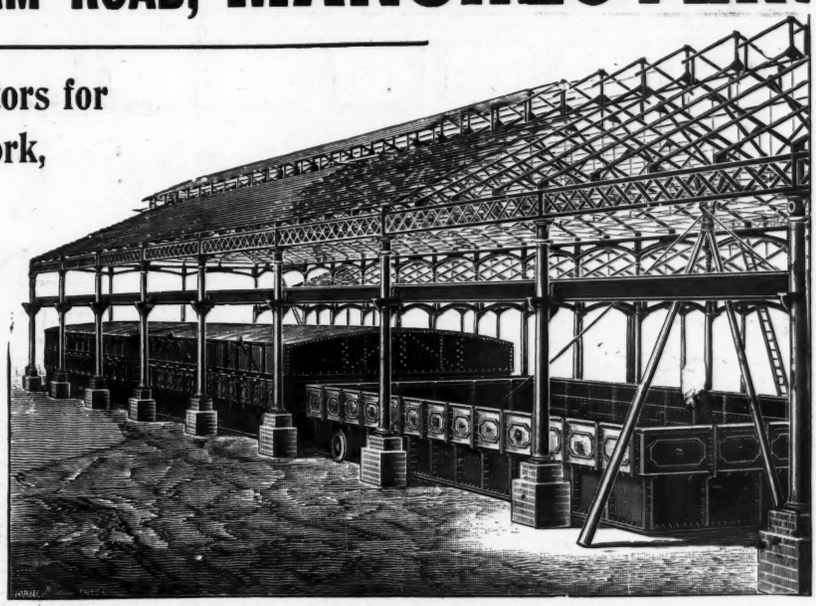

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